

**DRAFT**  
**ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL IMPACT REPORT**  
**FOR THE CASTLE MOUNTAIN MINE EXPANSION PROJECT**

**NEPA Lead Agency:** USDI Bureau of Land Management, Needles Resource Area

**CEQA Lead Agency:** County of San Bernardino

**Project Location:** 18 Miles South on Walking Box Ranch Road, Nipton  
San Bernardino County, California

**Public Review Period:** Comments must be received by 4:00 p.m., May 28, 1997

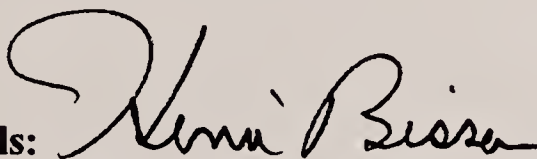
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Bureau of Land Management, Needles Resource Area  
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Needles, California 92363  
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<b>Public Hearings:</b>	<b>Barstow, California</b>	<b>Searchlight, Nevada</b>
	Holiday Inn	Searchlight Community Center
	1511 East Main Street	200 Michael Wendall Way
	Barstow, California	Searchlight, Nevada
<b>Date:</b>	April 29, 1997	April 30, 1997
<b>Time:</b>	7:00 p.m.	7:00 p.m.

Viceroy Gold Corporation, operator of the Castle Mountain Mine, has submitted applications to modify and expand mine operations. The Castle Mountain Mine operates on both private and public lands, under the jurisdiction of the County of San Bernardino, and the Bureau of Land Management. The Proposed Action would increase areas of open mine pit, create an overburden storage site, and expand the existing heap leach pad, on approximately 490 additional acres. Backfilling of mine pits is proposed on approximately 140 acres. The mine operating period would be extended 10 years past the currently permitted time until approximately 2010. Mining and processing methods, and rates, would not change. Minor modifications to County conditions and BLM stipulations are also proposed. Previous permitted surface disturbances (890 acres) and proposed surface disturbances (490 acres) at the conclusion of mining would total 1,380 acres of the 3,910-acre project area.

This Draft EIS/EIR has been jointly prepared by the Bureau of Land Management and the County of San Bernardino to satisfy the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Policy Act (CEQA). It provides the purpose and need for this document, describes the Proposed Action and its alternatives, and the existing environment. Environmental impacts are evaluated for the issues of geology, water resources, vegetation, wildlife, air quality, visual resources, cultural resources, land use, and hazards. The manner in which impacts of the Proposed Action and its alternatives can be reduced or avoided is identified.

**Responsible Officials:**

  
Henri Bisson  
District Manager  
California Desert District  
Bureau of Land Management

  
Valery Palmer  
Planning Director  
County of San Bernardino





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**CASTLE MOUNTAIN MINE EXPANSION PROJECT**  
**Draft**  
**Environmental Impact Statement / Environmental Impact Report**

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## SUMMARY

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# SUMMARY

Viceroy Gold Corporation, owner and operator of the Castle Mountain Mine, has submitted applications to amend its Bureau of Land Management (BLM) Plan of Operations, and its County of San Bernardino (County) Mine and Reclamation Plan. The amendments generally encompass the mining and processing of additional ore, which would extend the life of the Castle Mountain Mine.

The Castle Mountain Mine is an open pit heap leach gold mine. The mine was permitted in 1990 by the BLM and County to mine and process approximately 90 million tons of ore and overburden and reclaim the site over a 20-year period. Mining and processing activities would result in surface disturbances of up to 890 acres. The proposed amendments would increase the permitted area of surface disturbance by 490 acres to 1,380 acres. The site would encompass 3,645 acres of public lands and 265 acres of private lands.

Based on initial review of the applications submitted, the BLM and County determined that the Proposed Action could have the potential to result in a significant environmental impact, requiring preparation of an Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA), and an Environmental Impact Report (EIR) in compliance with the California Environmental Quality Act (CEQA). This EIS/EIR has been prepared jointly by the BLM and County to fulfill these requirements. It describes the existing mine, proposed amendments, and alternatives. The existing environment that would be affected is documented, and the direct, indirect, and cumulative environmental

impacts of the Proposed Action and alternatives are evaluated.

A Previous EIS/EIR, completed for initial mine development, contains extensive documentation of conditions and evaluations of impacts that are directly applicable to the Proposed Action and alternatives analyses. That document is therefore incorporated, and portions are summarized, as necessary.

## Proposed Action

The mine plan amendments encompass mining, processing, and reclamation of expanded facilities. In addition, site plan modifications, and changes to conditions and stipulations are proposed:

- **Period of Operations**
  - Extension of the life of the mine by approximately 10 years.
- **Site Plan Modifications**
  - Expansion of mining areas to include 175 acres for development of additional identified ore reserves.
  - Development of a 205-acre overburden storage site and associated haul roads.
  - Consolidation of the permitted configuration of three separate heap leach pads (covering 330 acres) into a single 420-acre pad and associated storage basin.
  - Modification of site boundaries to correlate with claim block boundaries, to incorporate certain private lands,



## SUMMARY

and provide an enlarged buffer area around operational facilities.

- Conversion of an exploration road into the Mine Reclamation Plan to a mine site overlook for the East Mojave Heritage Trail.

- **Modifications to Conditions and Stipulations**

- Modification of rock pit high wall staining requirement.
- Eliminate *Penstemon stephensii* condition.
- Reduction of the frequency of monitoring at Piute Spring.
- Expand text of vegetation salvage requirement to clarify program requirements.

As an extension of the existing mine, the expanded facilities would be developed in conjunction with the existing operation. All utilities infrastructure (water, power, communications), ore processing, conveyance, gold recovery, administration, mine shop, and reclamation facilities would continue to operate as they do today. The same mining and processing methods would be used; rates of mining processing are not proposed to change.

### Alternatives

Alternatives evaluated in detail include the No Action Alternative, which would involve continuation and completion of the existing mining and reclamation as scheduled, and the South Overburden Site Expansion Alternative. Based on the potential vegetation and wildlife

habitat impacts, effects to cultural resources, and visual resource effects of the Proposed Action, the South Overburden Site Expansion Alternative was developed. This alternative would change the location of waste rock, as compared to the Proposed Action. While this alternative would reduce certain impacts of the Proposed Action, other impacts are found to be greater.

In compliance with NEPA requirements, the alternatives to the Proposed Action are analyzed at the same level of detail as is the Proposed Action. Impact assessment and analysis, mitigation measures, and determination of significance of impact after mitigation are all presented for the Proposed Action and for each of the alternatives.

CEQA requires analysis of alternatives that would address significant impacts of the proposed project, but does not require that all of the alternatives be addressed at an equal level of detail to the proposed project. Such an analysis may be included in an EIR, but is not required. The alternatives analysis therefore meets or exceeds CEQA requirements.

### Summary of Impacts

The following paragraphs provide an overview of the key environmental issues discussed in the impact evaluations. Where the impacts of the South Overburden Site Expansion Alternative differ substantially from the Proposed Action, such differences are noted.

#### *Geology*

The Proposed Action would create additional mine pit area, overburden storage area, and expand the heap leach pad area. The potential for seismic activity at the mine site is low;

facilities would be developed in accordance with measures designed to ensure long-term stability, including engineering pit walls at safe slopes. The mine would continue to follow the currently permitted standard operating procedures with respect to the transport, storage, and use of hazardous materials. The implementation of these measures would ensure that geologic impacts would be minimal over both the short and long term. The South Overburden Site Expansion Alternative would have similar impacts to the Proposed Action.

### ***Water Resources***

Water resources impacts were the most extensive issue evaluated in the Previous EIS/EIR, due primarily to concerns with regard to Piute Spring, a perennial stream located approximately 16 miles from the mine's West Well Field. Monitoring of the aquifer drawdown during the mine operation has confirmed the previous analysis, which is directly applicable to the Proposed Action, that continued use of groundwater would not affect Piute Spring flow.

Neither surface nor groundwater quality would be affected by the Proposed Action. Castle Mountain Mine ore and overburden continue to be very low in sulfides that could generate acid mine drainage, and contaminant metals are all below regulatory thresholds of concern.

Impacts of the South Overburden Site Expansion Alternative would be the same as for the Proposed Action.

### ***Vegetation***

The Proposed Action would remove an additional 490 acres of desert vegetation. When added incrementally with the 890 acres

currently permitted, this would result in a significant and unavoidable cumulative impact. No special status species would be affected and no significant introductions of exotic species are expected. The South Overburden Site Expansion Alternative would reduce vegetation removal from 490 acres to 325 acres by reducing surface disturbances in the proposed North Overburden Site area.

Impacts to vegetation would be mitigated through revegetation practices, in accordance with the reclamation plan. Over 5 years of ongoing revegetation research have led to knowledge and experience with revegetation at the site. Revegetation will include the use of salvaged plants, greenhouse grown plants, and/or direct seeding. Re-establishment of pre-disturbance vegetation cover and species composition will be however, a lengthy process in this arid environment.

### ***Wildlife***

Impacts to wildlife in the area to be disturbed by the Proposed Action would result from direct habitat loss and increased human disturbances of wildlife. The Proposed Action would remove an additional 490 acres of wildlife habitat. These habitats are used by various animals in the Mojave Desert. Additional impacts to wildlife could potentially occur from continued use of the mine access road and continued use of cyanide solution, however, such impacts to date have been limited due to extensive mitigation measures. The South Overburden Site Expansion Alternative would reduce habitat loss from 490 acres to 325 acres by reducing surface disturbances in the North Overburden Site area. Other wildlife impacts would be similar to the Proposed Action.



## SUMMARY

Mining operations would continue to comply with mitigation measures designed to protect desert tortoise populations. Tortoise population densities are very low at the mine site and along the mine access road. Mitigation measures developed in the Previous EIS/EIR would continue to be implemented to protect wildlife.

### *Air Quality*

From an air quality perspective, the Proposed Action constitutes a minor onsite relocation of existing mine activities. Offsite vehicle travel, onsite heavy duty equipment use, and ore processing rate would not change from existing permitted levels. Increases expected in onsite ore and overburden haul vehicle travel would result in the generation of increased fugitive dust and engine exhaust emissions as compared with existing conditions. Mitigation measures already in effect for the existing mining operation would reduce these emission increases, and the Proposed Action would not affect attainment of regional air quality goals. But total emissions would exceed significance thresholds adopted by MDAQMD. Therefore, air quality impacts associated with the Proposed Action would be significant and unavoidable.

The South Overburden Site Expansion Alternative would require much longer ore and overburden haul distances as compared with existing conditions. Given present heavy-duty diesel engine technology and existing site information, it would not be possible to reduce the engine exhaust emissions increase (i.e., NO<sub>x</sub> associated with the longer haul distances below the significance thresholds adopted by MDAQMD. As a result, the South Overburden Site Expansion Alternative could

have an additive effect on regional and local air quality, possibly contributing to violations of Ambient Air Quality Standards. This would be inconsistent with MDAQMD's AQAP, and would represent a significant and unavoidable impact.

### *Visual Impacts*

Both the Proposed Action and South Overburden Site Expansion Alternative would result in topographic changes, removal of vegetation, and the potential for color contrasts associated with the pit high walls, overburden sites, and the heap leach facilities. These impacts would be noticeable from selected viewpoints in the Lanfair Valley. In addition, visual impacts associated with the mine structures and operations would continue as a result of extending the mine life. Visual impacts are considered to be significant and unavoidable.

Visual resource impacts would be mitigated through grading and shaping operations, placement of dark-colored rock, as available, on outer slopes of the overburden sites, and mine pit wall staining (as necessary). The mine will be revegetated in accordance with the approved Reclamation Plan.

### *Cultural Resources*

The Proposed Action would affect historic and prehistoric resources known to exist at the site. Mining activities may affect some buried resources in the historic Hart townsite area, although the few remaining surface features at the townsite would not be affected. Surface disturbance would not affect any unique cultural or religious sites. The South Overburden Site Expansion Alternative would not disturb historic and prehistoric resources that exist in the Hart townsite or any unique cultural or religious sites.

Mitigation measures to be incorporated into the project include data recovery, as needed, for significant prehistoric and historic sites. In addition, the mine would continue to comply with measures developed in the Previous EIS/EIR and subsequent approvals. These measures would adequately mitigate these impacts.

### ***Land Use***

Land use impacts of concern include land use compatibility, regulatory and policy consistency, and impacts on recreational uses of public/BLM lands in the vicinity, including the Mojave National Preserve. These impacts would apply to both the Proposed Action and the South Overburden Site Expansion Alternative. However, none of these impacts would be significant.

Mitigation measures necessary to ensure that there will be no significant impacts are related to compatibility of the project with grazing and recreation uses in the area were incorporated into the original project and would continue for the Proposed Action.

### ***Hazards***

The Proposed Action would continue the potential for exposure of employees to hazards of processing and operations, the use of hazardous materials, traffic hazards, and exposure of the public to potentially hazardous conditions as a result of mine excavations. These impacts would also apply to the South Overburden Site Expansion Alternative.

Continued implementation by the mine of the requirements of the RWQCB, San Bernardino County Fire Department, MSHA, and DEHS, in combination with the conditions of approval and stipulations associated with

previous permit approval will, in combination with an additional mitigation measure requiring the installation of earthen berms to restrict access to the mine pits from areas used for recreation, adequately mitigate these impacts.

### **Environmentally Preferable Alternative (NEPA) and BLM Preferred Alternative**

NEPA requires that the EIS identify the Environmentally Preferable Alternative, the alternative that best promotes the national environmental policy expressed in NEPA. The environmentally preferable alternative should be the alternative that results in the least environmental impact and best protects resources. For this project, the NEPA environmentally preferable alternative is the No Action Alternative. However, it is recognized that this alternative would not meet the project objectives.

BLM's preferred alternative recognizes legal and land management mandates and environmental protection. In accordance with these considerations and the objectives of the Proposed Action as mitigated, the preferred alternative is the Proposed Action.

### **Environmentally Superior Alternative (CEQA)**

CEQA requires that the EIR identify the Environmentally Superior Alternative. In addition, CEQA Section 15126(d)(4) requires that, if the Environmentally Superior Alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. The environmentally superior alternative is the Proposed Action.



## SUMMARY

### **List of Impacts and Mitigation Measures**

Table S-1 is a detailed listing of the impacts, mitigation measures and level of significance (after mitigation) for each of the alternatives evaluated. Mitigation measures reference existing measures already in place (Table S-2), and additional mitigations developed for the Proposed Action and alternatives.

Table S-2 provides a comprehensive list of the existing County Conditions and BLM Stipulations in place at the Castle Mountain Mine. These mitigation measures are organized by environmental issue for each of the subjects addressed in this EIS/EIR.



TABLE S-1 SUMMARY OF ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES								
PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>GEOLOGY</b>								
<b>Impact 3.2-1: Faults, Seismicity, and Slope Stability Impacts</b>								
Mining would create new cut slopes that could be subject to failures and erosion.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 6, 35, 36  BLM STIPULATIONS: Numbers 8, 9, 10, 92, 93	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative could result in additional impacts related to faults and seismicity.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.2-2: Hazardous Material Release Impacts</b>								
The Proposed Action would extend the potential for the release of hazardous materials resulting from a geologic event.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would extend the potential for the release of hazardous materials resulting from a geologic event.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>WATER RESOURCES</b>								
<b>Impact 3.3-1: Continued Groundwater Withdrawal</b>								
The proposed continuance of mine operations would result in additional continued use of Lanfair Valley groundwater resources through an extended period of withdrawal and an increase in average annual use.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 39 (a,b), 40 (a-f), 41, 42  BLM STIPULATIONS: Numbers 12 (a-b), 13 (a-f), 14, 15	Less than significant	The No Action Alternative would result in no changes to water resources beyond the continued operation of the mine.	No additional mitigation would be necessary.	Less than significant	The impacts to surface and groundwater from this alternative would not differ substantially from those of the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.3-2: Surface and Groundwater Quality</b>								
The Proposed Action would result in the generation of additional ore and overburden, which could affect surface or groundwater quality. Open mine pits may intercept groundwater.	<p>Implement existing measures:</p> <p>COUNTY CONDITIONS OF APPROVAL: Numbers 45, 46 (a-h), 47</p> <p>BLM STIPULATION: Number 3</p> <p><b>Additional Mitigation Measure 3.3-2a:</b> Should groundwater discharge into the mine pits, creating a water body that would remain following mine closure, measures shall be taken to assure that there will be no degradation of such water that could adversely affect human health or terrestrial and avian life. Under such a circumstance, the following measures shall be implemented:</p> <p>a. Monthly monitoring shall be completed during reclamation and closure to confirm the concentrations of metals and other constituents, using the EPA Method 1312, or equivalent prevailing testing technology.</p> <p><i>CONTINUED</i></p>	Less than significant	The No Action Alternative would result in no additional potential for impacts to surface and groundwater quality beyond completion of the approved operation.	No additional mitigation would be necessary.	Less than significant	This alternative would not differ from the Proposed Action in its potential to impact surface and groundwater quality.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.3-2: Surface and Groundwater Quality (Continued)</b>								
	<b>Additional Mitigation Measure 3.3-2a: (Cont.)</b> b. Should the monitoring results indicate that concentrations of constituents exceed or could likely exceed in the future the maximum contaminant level (MCL) for any constituent specified in the California Code of Regulations (§64431), backfilling of the mine pit floor shall be completed to an elevation above the high water level. Backfill rock shall have a high neutralization potential (NP:AP ratio greater than 5.0).							
<b>Impact 3.3-3: Surface Water Drainage and Diversions</b>								
Surface waters draining through the site could affect the expanded heap leach pads and stormwater solution storage basins.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 43, 44	Less than significant	The No Action Alternative would result in no changes in the approved operation.	No additional mitigation would be necessary.	Less than significant	This alternative would not differ in effects from the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>VEGETATION</b>								
<b>Impact 3.4-1: Native Plant Community Disturbance</b>								
The proposed modifications to existing operations would result in the direct removal of (CONTINUED)	Implement existing measures: COUNTY CONDITIONS OF APPROVAL: Numbers 48(a-l), 49, 50, 51, 52, 53, 55 (CONTINUED)	Less than significant for the project, but cumulatively significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, (CONTINUED)	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would result in the direct (CONTINUED)	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the (CONTINUED)	Less than significant for the project, but cumulatively significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.4-1: Native Plant Community Disturbance (Continued)</b>								
(Continued) plants on an additional 490 acres.	(Continued) BLM STIPULATIONS: Numbers 1, 2, 17, 20, 21(a-l), 22, 23(a-c), 24(a-d), 25, 27, 28, 30, 31, 52		(Continued) no additional environmental impacts would occur.			(Continued) removal of plants on 325 acres.	(Continued) same mitigation measures would be applicable.	
<b>Impact 3.4-2: Special Status Species Disturbance</b>								
The Proposed Action would result in no impacts to special status species.	No additional mitigation would be necessary.	Less than significant	The No Action Alternative would result in no additional impacts to special status species	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would not result in any new impacts to special status species.	No additional mitigation would be necessary.	Less than significant
<b>Impact 3.4-3: Unusual Plant Assemblage Disturbance</b>								
The Proposed Action would result in the removal of Lanfair Valley desert grassland UPA.	Implement existing measure: BLM STIPULATION: Number 26  Implement additional measure:  <b>Additional Mitigation Measure 3.4-3a:</b> The North Overburden Site shall be constructed in such a manner as to avoid disturbing the creosote bush rings located in this vicinity.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The unusual plant assemblage impacts would not differ from those of the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.4-4: Introduction of Exotic Species</b>								
The Proposed Action could result in the establishment of exotic and/or invasive species in disturbed areas.	Implement existing measures:  COUNTY CONDITION OF APPROVAL: Number 48(h)  (CONTINUED)	Less than significant	The No Action Alternative would result in no additional impacts related to exotic species.	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would result in less surface disturbance, thereby reducing the potential for the (CONTINUED)	The environmental consequences associated with this alternative would be less than those of the Proposed Action, but similar, and therefore the same mitigation measures would be applicable.	Less than significant

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.4-4: Introduction of Exotic Species(Continued)</b>								
	(Continued) BLM STIPULATION: Number 21(h)					(Continued) establishment of exotic species.		
<b>Impact 3.4-5: Potential Effects to Piute Spring Riparian Vegetation</b>								
The Proposed Action would result in no additional impacts to riparian vegetation associated with Piute Spring.	No additional mitigation would be necessary.	Less than significant	The No Action Alternative would result in no additional impacts to riparian vegetation associated with Piute Spring.	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would result in no additional impacts to riparian vegetation associated with Piute Spring.	No additional mitigation would be necessary.	Less than significant
<b>WILDLIFE</b>								
<b>Impact 3.5-1: Habitat Impacts Due to Surface Disturbance</b>								
Development of additional mine, overburden storage, and heap leach pad areas would result in an incremental reduction in the quality of onsite wildlife habitat as facilities are developed over the life of the mine.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 56, 58, 59, 60, 65, 67, 68, 70  BLM STIPULATIONS: Numbers 32, 33, 35, 36, 37, 41, 44, 47, 48, 50  Implement additional measure:  <b>Mitigation Measure 3.5-1a:</b> Provide compensation for desert tortoise habitat disturbed by the Proposed Action on a 1:1 basis, for that acreage determined by the BLM and the FWS to be desert tortoise habitat.	Less than significant	The No Action Alternative would result in no changes to the currently permitted mining operations.	No additional mitigation would be necessary.	Less than significant	This alternative would result in the disturbance of 325 acres of wildlife habitat.	As the environmental consequences associated with this alternative would be less than those of the Proposed Action, but similar in nature, the same mitigation measures would be applicable.	Less than significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.5-2: Cyanide Solution Mortality</b>								
Cyanide solution associated with the heap leach mining process could result in incidents of mortality to resident and migratory wildlife species.	<p>Implement existing measures:</p> <p>BLM STIPULATIONS: Numbers 7(a-c), 34(a-c)</p> <p>Implement additional mitigation measure:</p> <p><b>Mitigation Measure 3.5-2a:</b> The margins of the heap leach pad shall continue to be covered daily with netting and/or other material to deter access to the solution for the birds.</p>	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The used cyanide solution impacts of this alternative would not differ from those of the Proposed Action Alternative.	No additional mitigation would be necessary.	Less than significant
<b>Impact 3.5-3: Traffic Mortality</b>								
Continued mine operations and vehicle traffic could result in loss of desert tortoise and other wildlife due to vehicle strikes.	<p>Implement existing measures:</p> <p>COUNTY CONDITION OF APPROVAL: Number 61</p> <p>BLM STIPULATION: Number 38</p> <p>Implement additional measure:</p> <p><b>Mitigation Measure 3.5-3a:</b> Implement additional measures, if any, resulting from Section 7 consultation with FWS.</p>	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The traffic related impacts of this alternative would not differ from that for the Proposed Action Alternative.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.5-4: Lighting and Noise</b>								
The Proposed Action would result in the continued use of existing artificial light and noise sources and/or creation of new light sources thereby affecting wildlife.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Number 66  BLM STIPULATION: Number 45	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The impacts related to the continued use of artificial lighting of this alternative would not differ from those of the Proposed Action Alternative.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.5-5: Tortoise Mortality from Ravens</b>								
The Proposed Action could result in potential increases in common raven populations which could adversely affect the desert tortoise.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 16, 62, 64  BLM STIPULATION: Number 40	Less than significant	No additional potential for tortoises to be attacked would be created by currently permitted mine operations.	No additional mitigation would be necessary.	Less than significant	The potential impacts from ravens of this alternative would not differ from those of the Proposed Action Alternative.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.5-6: Raptor Mortality from Power Lines</b>								
The Proposed Action could result in raptor mortality to wildlife associated with power lines. The proposed modifications would extend the duration of activities that could result in mortality to raptors due to the presence of power lines.	Implement existing measures:  COUNTY CONDITION OF APPROVAL: Number 63  BLM STIPULATION: Number 49	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The impacts of this alternative to wildlife associated with power lines would not differ from those of the Proposed Action Alternative.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>AIR QUALITY</b>								
<b>Impact 3.6-1: Increases in Air Contaminant Emissions</b>								
The Proposed Action would contribute to increased emissions of fugitive dust and diesel engine exhaust associated with ore and overburden haul truck activity.	<p>Implement existing measures:</p> <p>COUNTY CONDITIONS OF APPROVAL: Numbers 33, 34, 71(a-j), 72,74, 75(a-c)</p> <p>BLM STIPULATIONS: Numbers 51(a-j), 53, 54, 55(a-c)</p> <p>MDAQMD SPECIAL CONDITIONS: Numbers: B02293-1, B02293-2, B02293-3, B02293-4, B02293-5</p> <p><b>Additional Mitigation Measure 3.6-1a:</b> All internal combustion engine-driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.</p> <p>This measure would reduce project-related NO<sub>x</sub> emissions increases, but not to a less than significant level.</p>	Significant and unavoidable	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would contribute to increased emissions of fugitive dust and diesel engine exhaust.	<p>In addition to the mitigation measures listed for the Proposed Action, implement the following additional mitigation measure:</p> <p><b>Additional Mitigation Measure 3.6-1a:</b> All internal combustion engine-driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.</p> <p>This measure would reduce project-related NO<sub>x</sub> emissions increases, but not to a less than significant level.</p>	Significant and unavoidable



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.6-2: Ambient Air Quality Standards</b>								
Air contaminant emissions associated with the Proposed Action would not affect the attainment status of Ambient Air Quality Standards in the MDAB.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	Air contaminant emissions associated with increased haul truck-related diesel engine exhaust for this alternative may affect the attainment status of Ambient Air Quality Standards in the MDAB.	In addition to the mitigation measures listed for the Proposed Action, Impact 3.6-1, implement the following additional mitigation measure:  <b>Additional Mitigation Measure 3.6-2a:</b> All internal combustion engine-driven equipment and vehicles shall be kept tuned according to the manufacturers specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.  This measure would reduce project-related NO <sub>x</sub> emissions increases, but not to a less than significant level.	Significant and unavoidable.
<b>Impact 3.6-3: CO Hot Spot</b>								
The Proposed Action would not contribute to potential CO hot spots in the project vicinity.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative will not contribute to potential CO hot spots in the vicinity of the Castle Mountain Mine.	No additional mitigation would be necessary.	Less than significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.6-4: Potential Odor Impacts</b>								
Organic materials and inorganic compounds typically associated with nuisance complaints due to odorous emissions are not associated with the Proposed Action.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	Organic materials and inorganic compounds typically associated with nuisance complaints due to odorous emissions are not associated with this alternative.	No additional mitigation would be necessary.	Less than significant
<b>Impact 3.6-5: Toxic Air Contaminants</b>								
The Proposed Action would not affect the rate of existing ore processing and related activities that currently emit small quantities of toxic air contaminants.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would not affect the rate of existing ore processing and related activities that currently emit small quantities of toxic air contaminants.	No additional mitigation would be necessary.	Less than significant
<b>Impact 3.6-6: Consistency with the AQAP</b>								
Continued implementation of present emission control measures as part of the Proposed Action will result in consistency with the AQAP.	No additional mitigation would be necessary.	Less than	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	Air contaminant emission increases associated with haul truck-related diesel engine exhaust for this alternative will not be consistent with the AQAP.	In addition to the mitigation measures listed for the Proposed Action, Impact 3.6-1, the following mitigation measure is required:  <b>Measure 3.6-8a:</b> All internal combustion engine-driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods. <i>(CONTINUED)</i>	Significant and unavoidable

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.6-6: Consistency with the AQAP(Continued)</b>								
							(Continued) This measure would reduce project-related NO <sub>x</sub> emissions increases, but not to a less than significant level.	
<b>VISUAL</b>								
<b>Impact 3.7-1: Visual Impact</b>								
The Proposed Action would result in significant adverse changes to the view of the Castle Mountain Mine site.	<p>Implement existing measures:</p> <p>COUNTY CONDITIONS OF APPROVAL: Number 60, 92, 93, 94, 95</p> <p>BLM STIPULATIONS: Number 71, 73, 75, 76, 77, 78, 88</p> <p><b>Additional Mitigation Measure 3.7-1a:</b> County Mitigation Measure #93 (BLM Stipulation #76) has not been needed for the Lesley Ann Pit and has not been implemented to date. The underlined changes are proposed to provide for continued use on an as-needed basis to future mine pit walls. 76. Rock staining solutions shall be used on the upper mine pit walls <u>where necessary to reduce the contrast of light-colored rock exposed by mining activities. This requirement shall exclude</u> (CONTINUED)</p>	Significant and Unavoidable	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would result in significant adverse changes to the view of the Castle Mountain Mine site.	<p>Implement existing mitigation measures.</p> <p><b>Additional Mitigation Measure 3.7-1b:</b> At the conclusion of mining, when low-grade ore has been processed and removed from its storage areas on the South Overburden Site, the overburden shall be redistributed to lower its elevation and related visual effects.</p> <p>The above activity may result in lowering of the South Overburden Site elevation by approximately 120 feet, to an elevation of approximately 4,630 MSL.</p>	

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.7-1: Visual Impact (Continued)</b>								
	(Continued) backfilled areas and the Lesley Ann Pit highwall. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes							
<b>Impact 3.7-2: Environmental Impact of Additional Mitigation Measure 3.7-1b</b>								
—	—	—	—	—	—	Additional Mitigation Measure 3.7-1b could result in environmental impacts beyond those of the alternative itself.	No additional mitigation would be necessary.	Less than significant
<b>Impact 3.7-3: Structures, Equipment, and Operations</b>								
The proposed action would result in additional impacts through extension of operation of the Castle Mountain Mine by approximately 10 years.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 89, 91  BLM STIPULATIONS: Numbers 72, 74	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would result in continued use of existing structures and equipment as would occur for the Proposed Action. No changes to operating methods would occur. The existing visual environment for these features would not, therefore be affected.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.7-4: Lighting and Glare</b>								
The Proposed Action would not create any new sources of lighting or glare.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	Impacts of this alternative would not create any new sources of lighting or glare.	No additional mitigation would be necessary.	Less than significant
<b>Impact 3.7-5: East Mojave Heritage Trail Overlook</b>								
An existing exploration road may remain available for use as a side excursion from the East Mojave Heritage Trail. If the creation of the overlook is determined to be feasible, reclamation and visual resource attenuation as completed on other drill roads would not be done.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	Impacts of this alternative would not differ from the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>CULTURAL RESOURCES</b>								
<b>Impact 3.8-1: Prehistoric and Historic Resources</b>								
The Proposed Action could affect aboriginal and historic sites.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 14, 96  BLM STIPULATIONS: Numbers 79, 80, 81, 82  (CONTINUED)	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would avoid most of the cultural resources found at the former Hart townsite.	No additional mitigation would be necessary.	Less than significant

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.8-1: Prehistoric and Historic Resources (Continued)</b>								
	<p>(Continued)            ADDITIONAL BLM            STIPULATIONS:            Should the Operator            uncover cultural resources            during the course of            operations, he shall do the            following:</p> <p>a) leave the cultural resource            in place; b) do not move or            otherwise alter the condition            of the resource affected;            c) immediately bring this to            the attention of the Area            Manager; d) maintain the            integrity of the cultural            resource pending            subsequent investigation.</p> <p><b>Additional Mitigation            Measure 3.8-1a:</b> In the            event that evaluation of the            Historic Hart townsite            (CA-SBR-3060H) leads to a            determination that the            property is eligible for            NRHP and CRHR            inclusion, two basic            mitigation alternatives are            available. First, potential            adverse impacts of the mine            expansion could be            mitigated by avoidance.</p> <p>(CONTINUED)</p>							

Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.8-1: Prehistoric and Historic Resources (Continued)</b>								
	(Continued) The second alternative consists of completion of an appropriate data-recovery program, with the following performance standards:  <ul style="list-style-type: none"> <li>• Define, recover, and analyze, with respect to relevant research and historical issues, representative samples of the archaeological materials and information contained within significant depositional loci subject to adverse impact.</li> <li>• Document results of the undertaking in a comprehensive report detailing the research context, investigative methods, findings, and consequent recommendations of the data-recovery program.</li> </ul>							
<b>Impact 3.8-2: Unique Cultural or Religious Sites</b>								
The Proposed Action would not affect any unique ethnic cultural values or restrict religious or sacred uses in the potential impact area.	No additional mitigation would be necessary.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The South Overburden Site Expansion Alternative would not affect any unique ethnic cultural values or restrict religious or sacred uses in the potential impact area.	No additional mitigation would be necessary.	Less than significant.



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>LAND USE</b>								
<b>Impact 3.9-1: Land Use Compatibility</b>								
The Proposed Action would result in expansion and an extended period of mining activities on the site. No changes in the types of land use are proposed.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 97, 98, 100, 101, 102  BLM STIPULATIONS: Numbers 83, 84, 85, 86, 87, 89	Less than significant	The No Action Alternative would result in no changes in land use beyond the continued operation of the mine.	No additional mitigation would be necessary.	Less than significant	The land use compatibility impacts of this alternative would not differ from those of the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.9-2: Consistency with Regulations, Plans, and Policies</b>								
The Proposed Action would require an amendment to the approved Conditional Use Permit and BLM Stipulations.	No additional mitigation would be necessary.	Less than significant	The No Action Alternative would result in no changes in land use beyond the approved operation.	No additional mitigation would be necessary.	Less than significant	This alternative would not differ in consistency with plans, policies, and regulations from the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.9-3: Recreation</b>								
The Proposed Action would modify the existing sightseeing opportunities at the historic Hart Town site, as this area would be mined.	Implement existing measures:  COUNTY CONDITION OF APPROVAL: Number 99  BLM STIPULATION: Number 88	Less than significant	The No Action Alternative would result in no changes in the East Mojave Heritage Trail beyond the approved operation.	No additional mitigation would be necessary.	Less than significant	This alternative would not differ in effects on the East Mojave Heritage Trail from the Proposed Action; however, it would be less disruptive to the Hart townsite area.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant

**Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)**

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>HAZARDS</b>								
<b>Impact 3.10-1: Processing Operations Hazards</b>								
The Proposed Action would create additional facilities, thereby continuing the potential for continued processing and operations hazards.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 9, 30, 31, 45, 46, 76, 77, 80, 81  BLM STIPULATIONS: Numbers 58, 62, 63	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	The alternative overburden configuration would not modify the existing or proposed processing operations. The impacts of this alternative would therefore not differ from those of the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.10-2: Hazardous Materials</b>								
The Proposed Action would result in expansion of mining activities and continued use of potentially hazardous materials.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 78, 79, 82, 84, 85, 87  BLM STIPULATIONS: Numbers 9, 18, 19(a-h), 56, 57, 59, 60, 61, 64, 66, 68, 70	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would have the same level of impact related to use of hazardous materials as the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant
<b>Impact 3.10-3: Transportation</b>								
The Proposed Action will result in continued use of access and haul roads.	Implement existing measures:  COUNTY CONDITIONS OF APPROVAL: Numbers 86, 87  BLM STIPULATIONS: Numbers 67, 69	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would have the same level of impact related to transportation as the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant



Table S-1 Summary of Environmental Consequences and Mitigation Measures (Continued)

PROPOSED ACTION			NO ACTION			SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE		
Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance	Impact Statement	Mitigation Measures	Level of Significance
<b>Impact 3.10-4: Public Access</b>								
The Proposed Action would result in the exposure of people to hazards on the project site.	Implement existing measures:  COUNTY CONDITION OF APPROVAL: Number 7  BLM STIPULATION: Number 91  <b>Additional Mitigation Measure 3.10-1a:</b> Earthen berms shall be constructed where necessary to restrict access to mine pits from recreational areas such as the East Mojave Heritage Trail, the agate field, or viewpoints or historic markers.	Less than significant	As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.	No additional mitigation would be necessary.	Less than significant	This alternative would have the same level of impacts related to exposure of the public as the Proposed Action.	As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.	Less than significant



**TABLE S-2**  
**SUMMARY OF EXISTING CASTLE MOUNTAIN MINE**  
**MITIGATION MEASURES**

**GEOLOGY**

**COUNTY CONDITIONS OF APPROVAL**

6. At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) overall for the overburden pile and 2.5:1 overall for the heap leach piles. Final slopes shall be contoured as provided for in the Mine/Reclamation Plan sections 1.8 and 1.10.
35. All structures and facilities shall meet applicable seismic building safety standards. [DEIR p. 6.2-1; (See also Conditions of Approval Nos. 6-7 above concerning artificial slopes).]
36. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. [DEIR p. 5.2-4.]

**BLM STIPULATIONS**

8. All structures and facilities shall meet applicable seismic buildings safety standards.
9. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed.
10. Protore shall be separated in the overburden pile to the extent possible.
92. At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) overall for the overburden pile and 2.5:1 overall for the heap leach piles. Final slopes shall be contoured as provided for in the Reclamation Plan sections 1.8 and 1.10.
93. Pit walls shall be constructed in accordance with the standards of the Mine Safety and Health Administration.

**WATER RESOURCES**

**COUNTY CONDITIONS OF APPROVAL**

39. Project water requirements shall be minimized by the following operational procedures:
  - a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.
  - b. Employing drip irrigation to distribute solution directly to the heap leach surfaces. [FIER 4.1.5.4.]
40. Groundwater Monitoring: The Applicant shall comply with the "Plan for Groundwater Monitoring and Contingency Water Supply" (August 1990) which requires that:
  - a. Two additional groundwater monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.
  - b. Water levels in monitor wells W-3, W-19, W-37, W-38, and PS-2 and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are monitored during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Applicant.
  - c. In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation.

## SUMMARY

Table S-2 (Continued)

- d. In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and other information shall be submitted to BLM for its consideration and decision respecting additional mitigation measures, if any.
  - e. BLM's decision respecting proposed additional mitigation actions (if any) arising from the reevaluation shall be circulated for public review and comment prior to implementation.
  - f. If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan. [FIER 4.1.5.1.]
41. Groundwater extraction shall be recorded at each well with flow meters. [DEIR p. 6.3-2.]
42. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Applicant shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIR p. 6.3-2.]
43. The heap leach piles shall be located to avoid disruption of the large drainage that passes through the western portion of the project site. Minor drainages that would be restricted by heap pad construction shall be diverted around the heap piles. Facilities shall be located to avoid major drainages. [DEIR p. 6.3-2, and FEIR at p. S-10.]
44. The Applicant shall obtain a Section 1603 permit from the California Department of Fish and Game before altering any stream channels. [DEIR p. 6.3-1.]
45. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIR p. 6.3-2; (See also Condition of Approval No. 30 above concerning capacity of containment area).]
46. The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including:
- a. Impermeable synthetic liners for process solution basins and heap leach pads.
  - b. Sealed drainage and collection facilities to transport or contain leaching solution.
  - c. Diked leach pads to confine and control drainage from the leach piles.
  - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and draindown of solution from the leach pads in the event pumps could not operate because of a power failure.
  - e. Drainage or diversion ditches outside the heap leach system to preclude entry of storm run-off into the system.
  - f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.
  - g. Regularly prepared monitoring reports on the current status of operations.
  - h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion. [DEIR 6.3-1.]



Table S-2 (Continued)

47. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion. [DEIR 6.3-2.]

#### BLM STIPULATIONS

3. The Operator shall meet all of the requirements of the Regional Water Quality Control Board's ("RWQCB") Waste Discharge Order and make all monitoring data available to the BLM upon request.
12. Project water requirements shall be minimized by the following operational procedures: [FEIS Section 4.1.5.4.]
  - a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.
  - b. Employing drip irrigation to distribute solution directly to the heap leach surfaces; use of sprinkler systems during the operational phase of each leach pad is prohibited.
13. The Operator shall comply with the "Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring" (August 1990) which requires: [FEIS Section 4.1.5.1.]
  - a. Two additional groundwater monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.
  - b. Water levels in monitor wells W-3, W-19, W-37, W-38, and PS-2 and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are monitored during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Operator.
  - c. In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation.
  - d. In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and other information shall be submitted to BLM for its consideration and decision as to whether additional mitigation measures are necessary.
  - e. BLM's decision as to whether additional mitigation measures are necessary, such as the provision of supplemental source of water for Piute Spring to ensure no adverse impacts to riparian habitat, shall be circulated for public review and comment prior to implementation.
  - f. If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Operator shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan.
14. Groundwater extraction shall be recorded at each well with flow meters. [DEIS p. 6.3-2.]
15. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Operator shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIS p. 6.3-2.]



## SUMMARY

Table S-2 (Continued)

### VEGETATION

#### COUNTY CONDITIONS OF APPROVAL

48. Within one year the Applicant shall develop a revegetation research program based upon information provided by a qualified expert in desert flora. This research program shall include measures such as:
- Review of available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.
  - Development of a research methodology and a schedule for implementation of the revegetation program for submittal to BLM and the County.
  - Revegetation success shall be determined by measuring the density and diversity of perennial species. The ten year goal for density, using only perennial species, will be 21% as compared to undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be 6% of the control. The 10 year goal for diversity will be 15% using only perennial species expressed as a similarity index of the control. The five year goal for diversity, based on a sigmoidal curve, will be 4%, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.
  - Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall be initiated to determine where available soil would be most effectively used.
  - Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.
  - Selection of a site appropriate for a nursery. Considerations will include water availability, access, and other requirements determined by the revegetation experts.
  - A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. The goal will be to initiate revegetation procedures within six months following completion of project activities over an area.
  - Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the project site, a weed control program acceptable to the County and BLM shall be implemented.
  - Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.
  - Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.
  - Ground preparation procedures shall include ripping and harrowing of compacted soils.
  - Implementation of a 5 year monitoring program following project completion to verify revegetation results, based upon the goals for diversity and density. [DEIR p. 6.4-2; FEIR Section 4.4.4.2.]
49. Baseline vegetation measurements shall be completed as part of the revegetation research program prior to surface-disturbing activities. [FEIR Section 3.2.1.]
50. Revegetation efforts shall be initiated as soon as practicable during the project operation period, as use of specific disturbed areas is completed. [DEIR p. 6.4-3.]

Table S-2 (Continued)

51. The project revegetation program shall collect and provide data on revegetation and recovery of the onsite desert grassland unusual plant assemblages (UPA) and provide such data to BLM to supplement UPA monitoring and planning strategies. [DEIR p. 6.4-3.]
52. Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM. [DEIR p. 6.4-3.]
53. Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed, instead of bulldozed, to enhance recovery. [FEIR Section 3.2.1.]
55. Fencing shall be used to exclude livestock from revegetated areas until termination of the project and maturation of the revegetated areas, such that grazing can be accommodated. The Applicant shall be responsible for removing these fences following reclamation, as determined by BLM. [DEIR p. 6.4-3.]

#### BLM STIPULATIONS

1. The Operator shall comply with all of the reclamation and other requirements set forth in the August 1990, Mine Plan and Reclamation Plan for the Castle Mountain Mine project (the "Reclamation Plan").
2. Before starting mining operations, the Operator shall post a \$619,000.00 letter of credit, cash, or security bond jointly with the County of San Bernardino ("the County") and the BLM, to ensure compliance with all the conditions of the Plan of Operations and Reclamation Plan. This bond amount shall be reviewed for adequacy at an initial review meeting, which shall take place as set forth in the Reclamation Plan, and thereafter at two year intervals. This bond amount shall be adjusted as set forth in detail in the Reclamation Plan. Portions of the bond shall be released to the Operator upon certification by the BLM and the County so that all reclamation conditions applicable to a given reclamation area have been complied with, as specified in detail in the Reclamation Plan. The County has agreed to administer the bond, subject to regulations No. 21(1)(2). Within 30 days following the release of the decision, the BLM, County, and the Operator will begin developing an agreement to design and implement the administrative bonding procedures.
17. The Operator shall obtain a Section 1603 permit from the California Department of Fish and Game before altering any stream channels.
20. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion in accordance with the Reclamation Plan.
21. Within one year of the approval of the plan of operation, the Operator shall develop a revegetation research program based upon information provided by a qualified expert in desert flora. This research program shall include, but not be limited to the following measures:
  - a. Review of all available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.
  - b. Development of a research methodology and a schedule for implementation of the revegetation program for submittal to BLM and the County.
  - c. Revegetation success shall be determined by measuring the density and diversity of perennial species. The ten year goal for density, using only perennial species, will be 21% as compared to undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be 6% of the control. The 10 year goal for diversity will be 15% using only perennial species expressed as a similarity index of the control. The five year goal for diversity, based on a sigmoidal curve, will be 4%, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.
  - d. Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall be initiated to determine where available soil would be most effectively used.



## SUMMARY

Table S-2 (Continued)

- e. Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.
- f. Selection of a site appropriate for a nursery. Considerations will include water availability, access, and other requirements determined by the revegetation experts.
- g. A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. The goal will be to initiate revegetation procedures within six months following completion of project activities over an area.
- h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the project site, a weed control program acceptable to the County and BLM shall be implemented.
- i. Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.
- j. Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.
- k. Ground preparation procedures shall include ripping and harrowing of compacted soils.
- l. Implementation of a 5 year monitoring program following project completion to verify revegetation results, based upon the goals for diversity and density. [DEIR p. 6.4-2; FEIR Section 4.4.4.2.]
  - (1) The revegetation bond for any specific area will not be released until the Operator demonstrates, based on a full 10 years of monitoring of the revegetation of that area, including at least one full year in which the vegetation is completely self-sufficient, that a density and diversity standards set forth in stipulation No. 21(c) have been met.
  - (2) Upon the completion of the monitoring period set forth in Stipulation No. 21 (1) (1) for each specific area to be revegetated, the BLM/County shall determine the extent to which the density and diversity standards set forth in Stipulation No. 21(c) have been met. If the Operator has not met the standard for density, the BLM/County shall retain an amount from the reclamation bond equal to .5 percent of the funds allocated in such bond for such specific area for every .05 percentage point contained in such standard by which the Operator has not met such standard. If the Operator has not met the standard for diversity, the BLM/County shall retain an amount from the reclamation bond equal to .5 percent of the funds allocated in such bond for such specific area for every .05 percentage point contained in such standard by which the Operator has not met such standard. The balance of the funds contained in the reclamation bond and allocated to such specific area shall be returned to the Operator.
- 22. Baseline vegetation measurements shall be completed as part of the vegetation research program prior to surface disturbing activities.
- 23. The Operator shall annually provide to the BLM a detailed description of the experiments performed and results achieved in connection with its revegetation research program and will further describe the progress of all revegetated areas.
  - a. As a result of its review of the information provided by these reports, the County or BLM may adjust the revegetation standards.
  - b. If the BLM determines that such adjustment is warranted, it will provide notice.



Table S-2 (Continued)

- c. By May 1 of the seventh and tenth years of mining operation, the BLM will issue a public notice of its determination as to whether or not adjustment of the revegetation standards is warranted, providing its rationale for this determination.
24. The Operator is contemplating the establishment of a Revegetation Review Committee. Within 30 days following receipt of all permits and approvals, the Operator shall advise the BLM of its decision regarding the establishment of a Revegetation Review Committee. If such a group is established, the Operator shall prepare a detailed plan describing the structure, membership selection procedures, and functions of the Committee that will be mutually agreeable to the BLM, the County, the Operator, California Division of Mines and Geology, and three representatives of the environmental community. The plan would incorporate the following:
- a. The Committee would consist of three technical experts, including an arid lands revegetation expert, a geologist/hydrologist and an arid lands ecologist; three representatives from the environmental community; and one representative each from the County, the BLM, the State Division of Mines and Geology, and the Operator.
  - b. The Committee would confer annually to discuss the annual revegetation reports filed by the Operator, in order to: interpret the information contained in these reports; advise the County and BLM of actions they might take to increase the success of revegetation efforts and adjustments which should be made to the revegetation standards.
  - c. The Committee would produce a written report by June 1 of each year.
  - d. The Operator would make provision for the reimbursement of Committee members of the costs associated with the participation in the Committee.
25. Revegetation efforts shall be initiated as soon as practicable during the project operation period, as use of specific disturbed areas is completed.
26. The project revegetation program shall collect and provide data on revegetation and recovery of the onsite desert grassland unusual plant assemblages (UPA) and provide such data to BLM to supplement UPA monitoring and planning strategies.
27. Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM.
28. Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed, instead of bulldozed, to enhance recovery.
30. Road segment A of the Mitigated Access Route shall, to the extent possible, use the existing alignment of the YKL Ranch water pipeline maintenance road for access to Nevada State Route 164.
31. Fencing shall be used to exclude livestock from revegetated areas, such that grazing can be accommodated. The Operator shall be responsible for removing these fences following reclamation, as determined by BLM.
52. Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring revegetation until operations are completed.

## SUMMARY

Table S-2 (Continued)

### WILDLIFE

#### COUNTY CONDITIONS OF APPROVAL

##### *Desert Tortoise*

16. All trash storage shall be maintained in closed containers.
56. A program to educate employees about area wildlife shall be implemented by the Applicant in connection with the safety program. The program shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or interfering with wildlife, especially the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations. [DEIR p. 6.5-2.]
58. Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times. [FEIR Table 3.1.]
59. The Applicant shall locate and flag onsite tortoise burrows before initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and FWS.
60. The Applicant shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status.
61. A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented.
62. Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife.
63. Power lines shall be constructed in a manner to discourage raven nesting/roosting.
64. As part of the onsite biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven populations are occurring.
65. The Applicant shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U.S. Fish and Wildlife Service Biological Opinion.

##### *Bats*

67. An examination of former mine shafts and adits shall be completed prior to earth-moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed during the winter hibernation period by an ecologist familiar with bat fauna. If a colony is found, or substantial use by individual bats is indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by colony will be required for project development, a mitigation program shall be completed.
68. To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress.

##### *Bighorn Sheep*

70. Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.



Table S-2 (Continued)

**BLM STIPULATIONS**

7. A monthly report on cyanide-related animal mortalities must be submitted to the BLM Needles office no later than the 10th of each month. The report shall include the following information:
  - a. The number and kind of each mortality attributed to cyanide. "Kind" will be reported under one of the following categories: raptors, songbirds, upland game birds, waterfowl, shore birds, mammals, and other;
  - b. Location where the dead animal was found; and
  - c. Other information requested by the BLM.
32. A program to educate employees about area wildlife shall be implemented by the Operator in connection with the safety program. The Operator shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or interfering with the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations.
33. An environmental specialist or contracted consultant shall be employed by the Operator to monitor the effectiveness of wildlife mitigation measures and the revegetation program. Results shall be reported to BLM and County monthly as concerns wildlife measures and annually concerning the revegetation program.
34. Measures to isolate cyanide processing solutions from wildlife have been incorporated into project design plans. Specific measures to be employed shall be tested for their effectiveness in an ongoing evaluation program after commencement of operations.
  - A. The Solution Storage Area shall:
    - (1) Utilize steel storage tanks.
    - (2) Be designed so that solutions are unavailable to wildlife.
    - (3) Include fencing or and netting over the emergency storage basin, designed to preclude access by birds and bats.
    - (4) Employ hazing techniques if process solution enters the stormwater storage basin.
    - (5) If avian entanglement becomes a problem, the Operator shall replace the netting over the emergency storage basing with a different type of net or will implement another method to prevent entanglement.
  - B. Heap Leach Piles
    - (1) Active heap leach pads shall be surrounded by chain link fencing.
    - (2) Drip irrigation methods shall be used to distribute solution directly on the heaps, including both tops and sides, in order to minimize potential ponding of water available to birds and other animals.
  - C. Solution Handling
 

The cyanide solution system shall be operated as a closed circuit, with solution transported from heap piles to storage tanks, to processing plant, and back to the heap piles in a system of pipes, rather than open ditches. Open ditches will be used only to carry heavy storm run-off.
35. Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times.
36. The Operator shall locate and flag on-site tortoise burrows before initiating surface disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and USFWS.



## SUMMARY

Table S-2 (Continued)

37. The Operator shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status.
38. A project sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented.
40. Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife.
41. Power lines shall be constructed in a manner to discourage raven nesting/roosting. As part of the on-site biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess whether unusual increases in raven populations are occurring.
44. The Operator shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U.S. Fish and Wildlife Service's Biological Opinion.
45. Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity.
47. An examination of former mine shafts and adits shall be completed prior to earth-moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed during the winter hibernation period by an ecologist familiar with bat fauna. If a colony is found, or substantial use by individual bats is indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by colony will be required for project development, a mitigation program shall be completed.
48. To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress.
49. Design and construction of electric power distribution poles shall incorporate provisions for raptor safety.
50. Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.

### ADDITIONAL BLM STIPULATIONS

Maintain compliance with FWS Biological Opinion #1-6-90-F-24.

### AIR QUALITY

#### COUNTY CONDITIONS OF APPROVAL

33. The Applicant shall apply to the MDAQMD and obtain the required permits for the installation and operation of all stationary fossil fuel equipment used on site.
34. The Applicant shall submit detailed drawings and specifications to the MDAQMD regarding the type of equipment that will be purchased and particle collection system that will be used.
71. A number of measures shall be incorporated into the project design to control the generation of PM<sub>10</sub> particulates. They include:
  - a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.
  - b. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.
  - c. Speed restrictions shall be enforced on mine roads to minimize surface disturbance of the roadways.

Table S-2 (Continued)

- d. Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.
  - e. Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.
  - f. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the MDAQMD for review before use. The debris collecting devices shall have a minimum design efficiency of 90 percent.
  - h. Blasting during high winds shall be minimized or curtailed to minimize wind-blown dust.
  - i. The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind-blown dust.
  - j. Dust suppression for secondary/tertiary ore crushing operations shall be controlled using baghouses constructed to specifications acceptable to the MDAQMD. [DEIR p. 6.6-1 and SDEIR p. 3-29.]
72. Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring revegetation until operations are completed. [DEIR p. 3.2-48 to 3.2-53.]
75. Emissions from mobile equipment and vehicular engines shall be controlled by:
- a. Using only low sulfur fuels.
  - b. Implementing a routine maintenance program to avoid operating inefficiencies.
  - c. Using busing/van pooling. [DEIR p. 6.6-3.]

#### BLM STIPULATIONS

51. A number of measures shall be incorporated into the project design to control the generation of PM<sub>10</sub> particulates. They include: [DEIS p. 6.6-1; SDEIS p. 3-29.]
- a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.
  - b. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.
  - c. Speed restrictions of 35 mph or less shall be enforced on mine roads to minimize surface disturbance of the roadways.
  - d. Vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.
  - e. Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.
  - f. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the MDAQMD for review before use. The debris collection devices shall have a minimum design efficiency of 90 percent.
  - g. The live storage portion of the coarse ore stockpile shall be covered to minimize windblown dust.
  - h. Blasting during high winds shall be minimized or curtailed to minimize windblown dust.



## SUMMARY

Table S-2 (Continued)

- i. The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind blown dust.
  - j. Dust suppression for secondary/tertiary ore crushing operations shall be controlled using baghouses constructed to specifications acceptable to the MDAQMD.
53. As required by the MDAQMD,  $PM_{10}$  concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to the MDAQMD to demonstrate that the project is not violating ambient air quality standards. [DEIS p. 6.6-2.]
54. Permanent on-site power shall be generated using propane or natural gas generators. [SDEIS p. 3-29.]
55. Emissions from mobile equipment and vehicular engines shall be controlled by: [DEIS p. 6.6-3.]
- a. Using only low sulfur fuels.
  - b. Implementing a routine maintenance program to avoid operating inefficiencies.
  - c. Using busing/van pooling.

### MDAQMD SPECIAL CONDITIONS

B02293-1. Materials processed (blasting, open pit material loading by front end loaders, transport from open pit mine to the crusher/storage area, and ore dumping to crusher/storage area) shall contain sufficient natural and/or added moisture to ensure compliance with District Rules 401, 402, and 403.

B02293-2. The bin which receive ore from the 120 ton trucks shall not be filled unless the water sprays are functioning prior to dumping.

B02293-3. Fugitive dust control shall be a routine, day-to-day operation for dust generated by vehicular traffic on unpaved roads shall be effected from a water cannon and/or traditional water truck and/or the application of chemical stabilizers as a minimum. A water cannon truck shall be available to mitigate the open pit loading by front end loaders to trucks.

B02293-4. Pit mining operations shall be restricted to 360,000 tons per week at a rate of 120 hours per week (but no more than 20 hours per day). The owner/operator (O/O) shall employ surveying to provide monthly estimates of ore removed. These estimates shall be logged, kept current on-site for a minimum of 2 years and provided to District personnel on request. Blasting shall be restricted to daylight hours only.

B02293-5. The O/O shall be restricted to hauling materials from the pit mine to the crusher/storage area to a rate of 90,000 ton/week (750 haul truck trips @ 120 tons each). The O/O shall log the number of truckloads, maintain the log on-site for a minimum of 2 years, and provide it to District personnel on request.

B02293-6. Annual crushing thruput shall be restricted to  $\leq 4.5 \times 10^6$  ton/year and not exceed 15,000 ton/calendar day. The O/O shall log the daily thruput and the log shall be kept current, on-site for a minimum of two years and provided to District Personnel on request.

Table S-2 (Continued)

**VISUAL RESOURCES****COUNTY CONDITIONS OF APPROVAL**

88. To minimize the degree to which they are seen from sensitive viewpoints: a) the overburden pile shall be located on an outwash slope bounded by small hills; and b) heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor.
89. Operational structures and the solution storage shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County.
90. Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period.
91. Upon project completion, the Applicant shall remove all operating facilities, including structures, equipment, transmission lines, and fencing, in conformance with the Mine/Reclamation Plan requirements.
92. Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight-line geometrics and potential contrast in form.
93. Rock staining solutions shall be used on the upper mine pit walls. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes.
94. Revegetation shall include some areas within the project boundary and along access roads that were disturbed by the actions of the third parties before reclamation of such disturbances were required under the Federal Land Policy Management Act (FLPMA) and the California Surface Mining and Reclamation Act (SMARA). Clay pits shall be reclaimed using overburden, with rock staining of the upper pit wall of the clay pit on Big Chief Hill. The Applicant shall incorporate reclamation of the adjacent North Clay Pit, located offsite, into the Mine/Reclamation Plan.
95. The Applicant shall comply with all of the reclamation requirements set forth in the Mine/Reclamation Plan, including, but not limited to, instituting the required vegetation program. Revegetation shall use common plants to the area.

**BLM STIPULATIONS**

71. To minimize the degree to which they are seen from sensitive viewpoints: a) the overburden pile shall be located on an outwash slope bounded by small hills; and b) heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor.
72. Operational structures and the solution storage shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County.
73. Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period.
74. Upon project completion, the Applicant shall remove all operating facilities, including structures, equipment, transmission lines, and fencing, in conformance with the Reclamation Plan requirements.
75. Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight line geometrics and potential contrast in form and line.
76. Rock staining solutions shall be used on the upper mine pit walls. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes.



## SUMMARY

Table S-2 (Continued)

77. Revegetation shall include some area within the project boundary and along access roads that were disturbed by the actions of third parties before reclamation of such disturbances was required under the Federal Land Policy management Act (FLPMA) and the California Surface Mining and Reclamation Act (SMARA). Clay pits shall be reclaimed using overburden, with rock staining of the upper pit wall of the clay pit on Big Chief Hill. The Operator shall incorporate reclamation of the adjacent North Clay Pit, located off-site, into the Reclamation Plan.
78. The Operator shall comply with all the reclamation requirements set forth in the Reclamation Plan including, but not limited to, instituting the required revegetation program. Revegetation shall use native plants common to the area.
88. The Operator shall provide a viewpoint at the Castle Mountain Project Site, describing past and present gold mining operations in the area. The interpretive site will be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. the site shall include descriptive information about the permitting process, agencies involved in that process, measures taken to protect the environment, current mining operations, and the history of the Hart Mining District. This descriptive information shall be approved by the BLM.

### CULTURAL RESOURCES

#### COUNTY CONDITIONS OF APPROVAL

14. In the event that project-related excavation uncovers a buried paleontological or archeological deposit on any of the patented mining claims, work in the area will be halted and, at the expense of the Applicant, a qualified paleontologist or archeologist will be contacted to evaluate the significance of the find and make recommendations as to its disposition. The Applicant shall complete and fund all mitigation measures deemed necessary.
96. In the event that a project-related excavation uncovers a buried paleontological or archaeological deposit on any of the patented mine claims, comments submitted by native American representatives pertaining to these sensitive areas shall be considered in the evaluation process and artifacts of religious value made available to qualified Native Americans for religious ceremonies. Pursuant to State and federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson City, or its designate.

#### BLM STIPULATIONS

79. Field work, laboratory studies, and documentation of research results shall be conducted for the five aboriginal sites (CA-SBr-5705, -5706, -5707, 5708, and -6055) located in the vicinity of the Mitigated Access Route and the project operations area. Comments submitted by local Native American representatives pertaining to these sensitive areas shall be considered in the evaluation process and artifacts of religious value made available through the BLM to qualified Native Americans for religious ceremonies. Pursuant to State and Federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson City, or its designate.
80. The Operator shall construct a chain link fence, with no gate, around the Hart townsite cemetery and post a descriptive sign within the fence.
81. The Operator shall implement an informational program for employees to increase their awareness of the value of cultural resources and the need for their preservation. This program shall be achieved by providing a section on the prehistory and history of the project area in the employee manual. This section shall stress the fragility of the archaeological record and the responsibility of employees in preserving these resources. The manual shall be updated, as necessary to reflect new research findings which may occur relative to the history and prehistory of the area.

Table S-2 (Continued)

82. Access roads to areas of high cultural sensitivity in the project's vicinity in the project vicinity shall be closed or rerouted.

#### **ADDITIONAL BLM STIPULATIONS**

Should the Operator uncover cultural resources during the course of operations, he shall do the following: a) leave the cultural resource in place; b) do not move or otherwise alter the condition of the resource affected; c) immediately bring this to the attention of the Area Manager; d) maintain the integrity of the cultural resource pending subsequent investigation. (Castle Mountain's Plant Propagation House Complex: CA069-P02-Greenhouse)

Proponent shall immediately bring to the attention of the Authorized Officer any subsurface archeological resources encountered during construction and maintain the integrity of such resources pending subsequent investigation. (CMV's Sodium Cyanide Mixing System: CA069-PO2-NACN/MIXSYS)

#### **LAND USE**

#### **COUNTY CONDITIONS OF APPROVAL**

97. The Applicant shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by the BLM.
98. Grazing lessees shall be compensated by the Applicant for livestock killed or injured by vehicles driven by project employees.
99. The Applicant shall provide a viewpoint at the Castle Mountain Project site, describing past and present gold mining operations in the area. The interpretive site would be located at a point overlooking both the old Hart townsite and the Lesley Ann pit. The site shall include descriptive information about current mining operations and the history of the Hart Mining District.
100. Project site access routes shall be limited to the Project's operational period. Public use shall be discontinued following road reclamation.
101. Following project completion, the Lesley Ann/Jumbo and Oro Belle pits shall be accessible for potential recovery of low grade ore.
102. Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles.

#### **BLM STIPULATIONS**

83. The Operator shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by BLM. [DEIS p. 6.10-1.]
84. Grazing lessees shall be compensated by the Operator for livestock killed or injured by vehicles driven by project employees. [DEIS p. 6.10-2.]
85. Cattleguards shall be installed and maintained by the Operator at points where cattle control fences cross the access roads.
86. If project activities inhibit use of watering facilities by cattle, the Operator shall provide alternate water sources, in accordance with requirements of BLM.
87. At the discretion of BLM, the abandoned tank, troughs, and corral in Section 23 shall be removed and disposed of by the Operator.
88. The Operator shall provide a viewpoint at the Castle Mountain Project Site, describing past and present gold mining operations in the area. The interpretive site will be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. the site shall include descriptive information about the permitting process, agencies involved in that process, measures taken to protect the environment, current mining



## SUMMARY

Table S-2 (Continued)

operations, and the history of the Hart Mining District. This descriptive information shall be approved by the BLM. [DEIS p. 6.10-2.]

89. A historical marker shall be placed along the Searchlight Access Route at a location where the railroad bed of the former Barnwell and Searchlight Railroad is noticeable. The marker shall include a brief description of the history of the railroad.

### HAZARDS

#### COUNTY CONDITIONS OF APPROVAL

7. Pit walls shall be constructed in accordance with the standards of the Mine Safety and Health Administration.
9. At the time of project decommissioning, all equipment, buildings, structures and refuse shall be removed from the site, all hazards mitigated, and reclamation completed per the approved Mine/ Reclamation Plan.
30. The Applicant shall abate potential impacts to surface and groundwater associated with the onsite storage of fossil fuels, chemicals, explosives, reagents and use of dust binding agents by mitigations through the implementation of applicable RWQCB, DEHS and San Bernardino County Fire Marshall regulations. Use of above ground storage tanks requires the preparation of a contingency plan for secondary containment of potential leaks to the satisfaction of the RWQCB and the DEHS, including the following:
- A containment area designed to accommodate the volume of the tank plus a 24 hour, 100-year storm.
  - If a series of tanks are involved, containment shall be provided for 10 percent of the combined capacity plus a 24-hour, 100-year storm.

Below ground storage tanks shall be subject to the following RWQCB regulatory criteria:

- All tanks shall be registered with the RWQCB and shall conform to RWQCB construction standards. The DEHS will be responsible for issue permits for implementation of these requirements and standards.
  - The County shall inspect and approve such tanks, every 3 years, for structural integrity.
31. A "Business Plan" as defined in Chapter 6.95 of the Health and Safety Code, detailing the plan for emergency release or threatened release of hazardous materials and wastes shall be required. Obtain clearance from DEHS/Hazardous Materials Section.
45. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIR p. 6.3-2; (Refer also to Condition of Approval No. 30, above, concerning capacity of containment area)].
46. The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids.
76. A vehicle shall be onsite for emergency response in the event of an accident. The Applicant shall maintain first aid and fire suppression equipment onsite. Procedures for emergency response shall be developed for use in the event of an accident. [DEIR p. 6.7-2.]
77. Personnel trained in security shall be onsite on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons. [DEIR p. 6.7-2.]
78. Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures. [DEIR p. 6.7-2.]

Table S-2 (Continued)

79. Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting. [DEIR p. 5.7-1.]
80. The project shall comply with applicable MSHA standards to achieve a safe working environment. Rules and regulations of DEHS shall be followed to assure that no significant public health hazard would be created. [DEIR p. 5.7-1.]
81. Fences, and earthen berms to block vehicular access into open pit areas, shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors [DEIR p. 5.7-7.]
82. Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed offsite by a contracted hauler. [DEIR p. 5.7-5.]
84. Trucks containing hazardous chemicals shall be properly labeled and equipped to ICC specifications. [DEIR p. 5.7-5.]
85. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials. [DEIR p. 5.7-6.]
86. The Applicant shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted. [DEIR p. 6.7-2; FEIR Section 3.2.]
87. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIR p. 6.7-2.]

#### BLM STIPULATIONS

9. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. [DEIS p. 6.2-1.]
18. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIS p. 6.3-2.]
19. The Operator shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including: [DEIS p. 6.3-1.]
  - a. Impermeable synthetic liners for process solution basins and heap leach pads.
  - b. Sealed drainage and collection facilities to transport or contain leaching solution.
  - c. Diked leach pads to confine and control drainage from the leach piles.
  - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and drain down of solution from the leach pads in the event pumps could not operate because of a power failure.
  - e. Drainage or diversion ditches outside the heap leach system to preclude entry of storm run-off into the system.
  - f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.
  - g. Regularly prepared monitoring reports on the current status of operations.
  - h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion.



## SUMMARY

Table S-2 (Continued)

56. Hydrogen cyanide shall be routinely monitored at the processing facilities as a requirement of the employee health and safety plan implemented according to MSHA Regulations. In addition, the Operator shall periodically perform airborne HCN surveys to verify that the potential public exposure to cyanide is inconsequential. [DEIS p. 6.6-3.]
57. A spill prevention, control, and countermeasures plan shall be developed to establish procedures for spill prevention and cleanup. [DEIS p. 6.7-1.]
58. A vehicle shall be on-site for emergency response in the event of an accident. The Operator shall maintain first aid and fire suppression equipment on-site. Procedures for emergency response shall be developed for use in the event of an accident. [DEIS p. 6.7-2.]
59. Personnel trained in security shall be onsite on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons. [DEIS p. 6.7-2.]
60. Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures. [DEIS p. 6.7-2.]
61. Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting. [DEIS p. 5.7-1.]
62. The Project shall comply with applicable MSHA standards to achieve a safe working environment. Rules and regulations of DEHS shall be followed to assure that no significant public health hazard would be created. [DEIS p. 5.7-1.]
63. Fences, and earthen berms to block vehicular access into open pit areas, shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. [DEIS p. 5.7-7.]
64. Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed offsite by a contracted hauler. [DEIS p. 5.7-5.]
66. Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications. [DEIS p. 5.7-7-5.]
67. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials. [DEIS p. 5.7-6.]
68. Lime, sodium hydroxide, or other alkaline material shall be added to the cyanide solution to reduce the potential for emitting hydrogen cyanide. [DEIS p. 5.7-2.]
69. The Operator shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted. [DEIS p. 6.7-2; FEIS Section 3.2]
70. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIS p. 6.7-2.]
91. Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles. [DEIS p. 5.7-8.]

# **CHAPTER 1.0**

## **INTRODUCTION.**

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# 1.0 INTRODUCTION

## 1.1 EIS/EIR PURPOSE, USE, AND SCOPE

This Environmental Impact Statement/Environmental Impact Report (EIS/EIR) has been prepared in compliance with the National Environmental Policy Act (NEPA) and implementing regulations (40 CFR 1501 *et seq.*), and the California Environmental Quality Act (CEQA) and CEQA Guidelines (California Code of Regulations §15000 *et seq.*). Its purpose is to address environmental impacts of proposed modifications to the existing Castle Mountain Mine, located in the Lanfair Valley of eastern San Bernardino County, California (Figure 1.0-1).

The Castle Mountain Mine is an open pit heap leach gold mine. The mine was permitted by the United States Department of the Interior (USDI), Bureau of Land Management (BLM) and County of San Bernardino (County) in 1990 to mine and process approximately 90 million tons of ore and overburden and reclaim the site over a 20-year period. The permitted operation covers approximately 890 acres of a 2,735-acre site. Viceroy Gold Corporation ("Viceroy" or "Applicant") proposes to mine additional ore reserves that have been delineated since the 1990 permits were issued, thereby extending the mine's operational life.

### 1.1.1 Purpose and Use

The purpose of an EIS is to ensure that the policies and goals of NEPA are considered during the actions of federal agencies. An

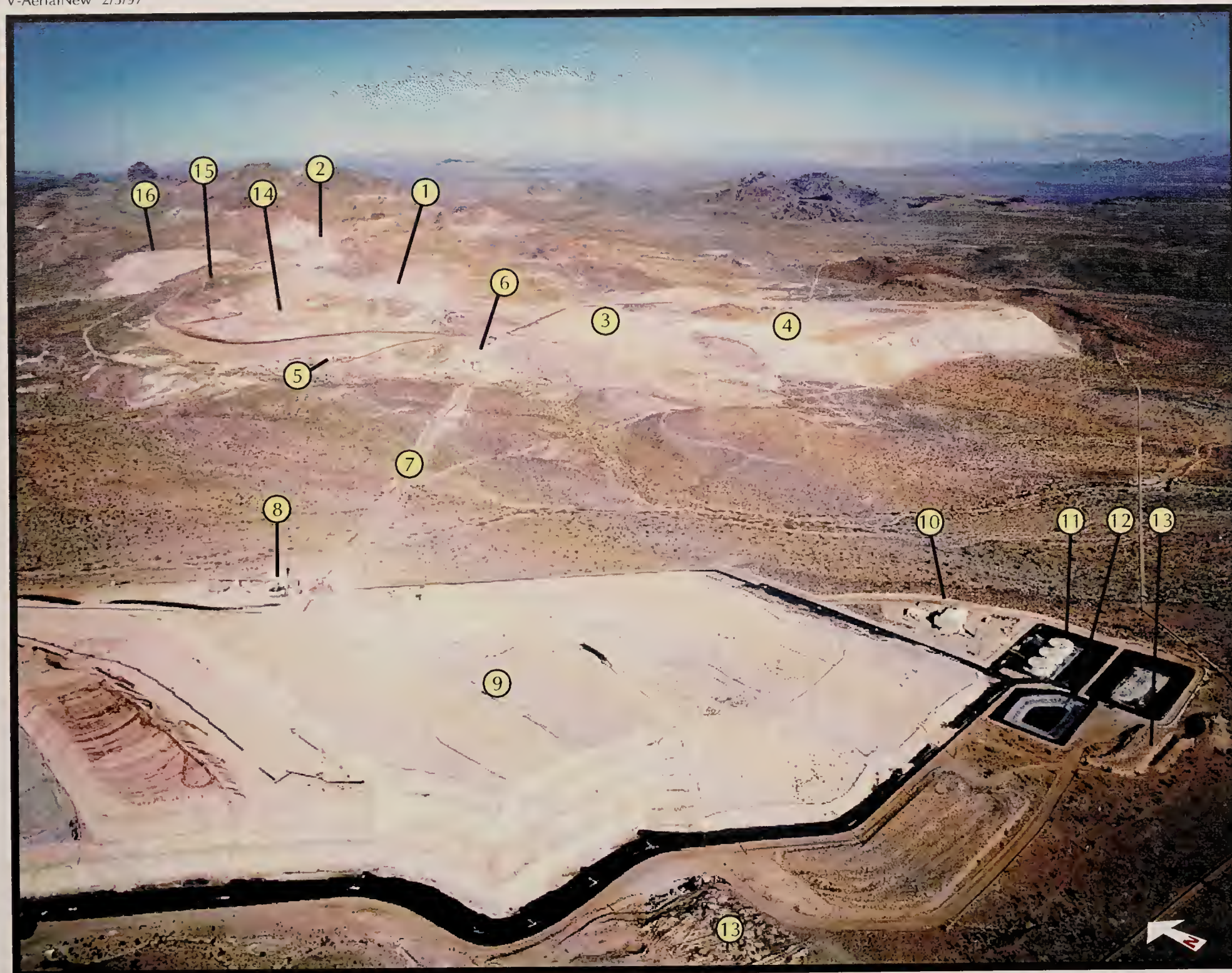
EIR prepared under CEQA similarly serves as an informational document that will inform agency decision-makers and the public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. While the information in an EIR or EIS does not control an agency's ultimate discretion on a project, the agency must analyze each significant effect identified in the EIR or EIS. In addition, under CEQA, the agency must adopt feasible mitigation measures or alternatives if they would avoid significant environmental effects.

This EIS/EIR contains the information and evaluations required by both NEPA and CEQA. In particular, the document provides the following:

- The purpose and need of this document pursuant to NEPA and CEQA Guidelines;
- The Proposed Action and alternatives are described;
- The environment to be affected by the Proposed Action and alternatives is described and potential impacts evaluated; and
- The manner in which effects of the Proposed Action and alternatives can be reduced or avoided is identified.

In compliance with NEPA requirements, the alternatives to the Proposed Action are analyzed at the same level of detail as the Proposed Action. Impact assessment and





## Legend

- ① Lesley Ann Pit
- ② Proposed Open Pit Development
- ③ Low Grade Ore Stockpile
- ④ South Overburden Site
- ⑤ Administration Office
- ⑥ Crushing Plant
- ⑦ Overland Conveyor
- ⑧ Comminution Circuit
- ⑨ Heap Leach Pad
- ⑩ Gold Recovery Plant
- ⑪ Process Solution Storage Tanks
- ⑫ Stormwater Overflow Basin
- ⑬ Growth Media Stockpile
- ⑭ North Clay Pit Reclamation Area
- ⑮ South Clay Pit Reclamation Area
- ⑯ North Overburden Site

Map Prepared By:  
Lilburn Corp., 1996

Photo Date:  
December, 1996

## Castle Mountain Mine Aerial Photograph

CASTLE MOUNTAIN MINE  
San Bernardino County, California

**LILBURN**  
CORPORATION

**Figure 1.0-1**



analysis, mitigation measures, and determination of significance of impact after mitigation are all presented for the Proposed Action and for each of the alternatives.

CEQA requires analysis of alternatives that would address significant impacts of the proposed project, but does not require that all of the alternatives be addressed at an equal level of detail to the proposed project. Such a detailed analysis may be included in an EIR, but is not required.

The Proposed Action involves extending the operational life of an open pit heap leach gold mining operation and enlarging certain site facilities. The operational revisions principally involve:

- Extending the mine's operating phase by 10 years;
- Revising the configurations and enlarging the areas occupied by open pits, overburden storage sites and heap leach pads; and
- Related site plan modifications and revisions to conditions and stipulations, including elimination of pit high wall staining, adding specificity to vegetation salvage requirements, and reducing the frequency of monitoring of Piute Spring.

The operational revisions would increase the surface disturbance area from the 890 acres presently permitted, to an estimated total of 1,380 acres.

This document will be used by both the BLM and San Bernardino County in their consideration of land use approvals. These agencies have the responsibilities for preparing the EIS/EIR. Consequently, these

agencies are termed the Federal Lead Agency and State Lead Agency, respectively, for the environmental review process. Other agencies may also use this document in considering the various permit amendments needed.

As lead agency for compliance with NEPA, the BLM will use this document in its consideration of the modifications of the Plan of Operations. The BLM is required, by NEPA, to consider environmental factors in authorizing activities on public lands, such as the Proposed Action. The authority to apply mitigation to the project is primarily related to 43 Federal Code of Regulations, §3809 *et seq.*, under which the BLM regulates mining on public lands.

The County is responsible for implementing the California Surface Mining and Reclamation Act (SMARA) and for approval of the proposed site plan in accordance with the County Development Code. As lead agency for compliance with CEQA, San Bernardino County will use this document in its consideration of amending the project's Conditional Use Permit (CUP) and amending the Castle Mountain Mine Reclamation Plan.

The existing mine is operating under approvals from these agencies, as well as numerous other permits and approvals from other local, state, and federal agencies including a Waste Discharge Order from the Colorado River Basin Regional Water Quality Control Board, an air quality permit to operate (Mojave Desert Air Quality Management District), emergency fire, evacuation and rescue plans (Department of Labor, Mine Safety and Health Administration) and others. Some of the approvals that may need to be modified to reflect the proposed mine plan modifications are shown in Table 1.0-1. This



## 1.0 INTRODUCTION

TABLE 1.0-1 POTENTIAL PERMITS AND APPROVALS		
Agency/Department	Permit/Approval Process	Purpose and Project Applicability
<b>FEDERAL AGENCIES</b>		
Bureau of Land Management	<b>Plan of Operations.</b> (43 CFR 3809 <i>et seq.</i> )	Required for mining operations on public lands. Revised Plan of Operations reflecting proposed changes would need to be approved for continued operations incorporating new site areas.
	<b>Environmental Review.</b> (NEPA, 42 USC 4321 <i>et seq.</i> )	Evaluation of environmental impact. Analysis of proposed changes to mining operations not considered in previous EIS/EIR is needed.
	<b>Cultural/paleontological resource permit.</b> (16 USC 470). <b>Archeological Resources Protection Act survey.</b> (16 USC 469 <i>et seq.</i> )	Identify and evaluate effects on historic properties. Impacts to Hart townsite and archaeological resources need to be addressed.
Fish and Wildlife Service	<b>Biological Assessment, Section 7 Consultation, Biological Opinion.</b> (Endangered Species Act, 16 USC 1531 - 1544)	To limit potential impacts on threatened and endangered species. Consultation with FWS would be needed for the expanded areas and extended period of operation for impacts to the desert tortoise.
<b>STATE AGENCIES</b>		
State Water Resources Control Board and Regional Water Quality Control Boards	<b>National Pollutant Discharge Elimination System Permit.</b> (33 USC 1251 <i>et seq.</i> )	Required for discharges to surface waters. Surface runoff from overburden or other rock from Proposed Action would need to be addressed.
	<b>Waste Discharge Requirements.</b> (Cal Water Code 13000 <i>et seq.</i> )	Discharges of waste that might affect water quality. May need to be revised for reconfigured heap leach pad.
	<b>Business Plan/Spill Prevention Control and Countermeasures Plan.</b> (Health and Safety Code 25270 <i>et seq.</i> ; 40 CFR Part 112.)	Storage and handling of reagents. No project changes proposed that would affect materials handling; extended period of operation may need to be reflected in approved plan.

TABLE 1.0-1 (Continued) POTENTIAL PERMITS AND APPROVALS		
Agency/Department	Permit/Approval Process	Purpose and Project Applicability
Department of Fish and Game	<b>Streambed Alteration Agreement.</b> (Fish and Game Code 1603)	Change in natural state of river, stream, lake which affects fish or wildlife resource. Streambeds are generally lacking, or avoided at the mine.
	<b>California Endangered Species Act §2081 Permit.</b> (Fish and Game Code 2081)	Incidental take of state-listed threatened/endangered species or habitat (if anticipated). The extended period of operations may need to be considered in the 2081 permit.
<b>LOCAL AGENCIES</b>		
San Bernardino County	<b>Use Permit/Mining Permit.</b> (SMARA, PRC 2710 <i>et seq.</i> ); county/city land use ordinances.	Ensure operations are conducted in compliance with County ordinances. A revised CUP will be needed to incorporate mine plan changes and extended operation.
	<b>Reclamation Plan and Financial Assurance.</b> (PRC Section 2710 <i>et seq.</i> )	Ensures mining sites are reclaimed to beneficial uses following operations. Additional areas planned for mining and processing, and extended period of operations are reflected in the revised Reclamation Plan and would need to be reflected in the annually reviewed financial assurance.
	<b>Environmental Review.</b> (CEQA, PRC §21000 <i>et seq.</i> )	Evaluation of environmental impact. Analysis of proposed changes to mining operations not considered in previous EIS/EIR is needed.

document is intended to serve as the environmental evaluation to be used, with other information as necessary, for such permit modifications as may be needed.

### 1.1.2 Joint EIS/EIR Process

The BLM determined that the Proposed Action will require an EIS, to be completed in compliance with NEPA and the BLM NEPA

Handbook (BLM, 1988). The County determined that the project will require an EIR to be completed in compliance with CEQA and its guidelines for implementation. As the NEPA process for an EIS and the CEQA process for an EIR are similar, the documents can be completed in a combined format that accommodates the needs of both agencies. CEQA and NEPA encourages such a cooperative effort for joint NEPA and CEQA



## 1.0 INTRODUCTION

planning processes, joint environmental research and studies, joint public hearings and joint environmental impact documents to reduce duplication of effort. Other agencies and the public are also better served by the efficiency of coordinated efforts.

The process of preparing an EIS/EIR consists of a series of procedural steps to ensure that adequate analysis of environmental issues occurs and opportunities for interagency coordination and public involvement are encouraged. Procedural requirements to accomplish NEPA and CEQA objectives include:

- **Disclose Environmental Impacts to Decision Makers and Public** (through preparation and use of the EIS/EIR)
- **Identify and Prevent Environmental Damage** (through identification of mitigation measures, identification and analysis of alternatives, and mitigation monitoring)
- **Enhance Public Participation** (through public notice requirements, public availability of documents, and response to comments)
- **Foster Intergovernmental Coordination** (through use of early consultation, notices of preparation, scoping meetings, and State Clearinghouse and EPA review)
- **Disclose Agency Decision Making** (through preparation of findings and statements of overriding consideration)

An EIS/EIR is prepared in two stages: a draft and a final document. Each of the individual steps in the overall process contributes to the preparation of the draft or final EIS/EIR.

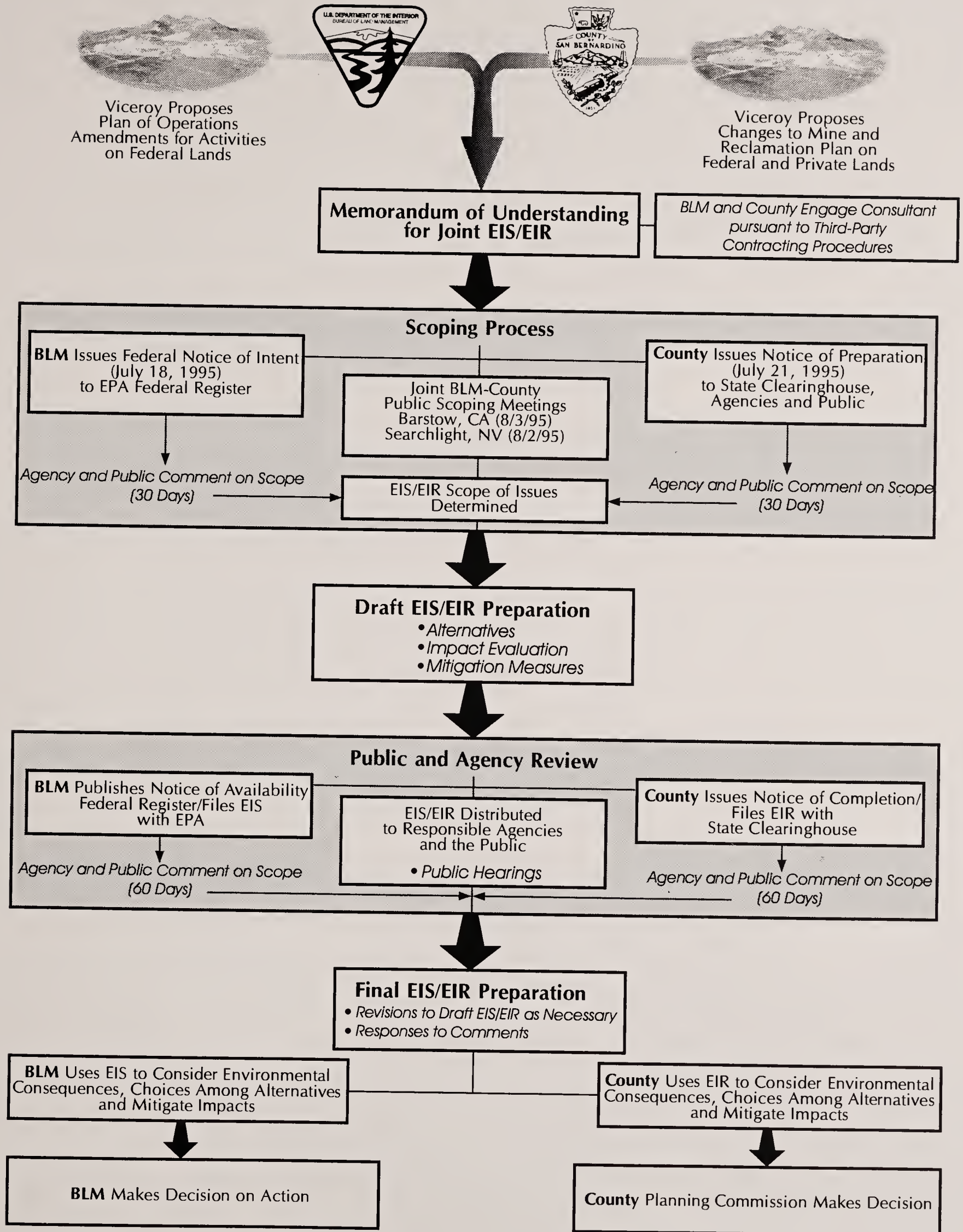
The steps being undertaken for the preparation of this EIS/EIR on the Castle Mountain Mine plan amendments are depicted in Figure 1.0-2.

### 1.1.3 EIS/EIR Scope

#### Use of Previous Documentation

The Castle Mountain Mine initiated pre-production mining in June 1991, and began full operation in February 1992. These activities were preceded by an EIS/EIR process for the "Castle Mountain Project" extending over nearly a 3-year period. The EIS/EIR documentation comprises a public record of over 3,000 pages, which at that time was one of the most extensive analyses ever completed for a mining project on public lands in California. There was a high degree of public involvement in the process; nearly 300 people attended public hearings on the Draft EIS/EIR and 500 copies of the document were distributed. The project was approved by the San Bernardino County Planning Commission on September 29, 1990; the BLM Record of Decision was issued on October 30, 1990. Additional analysis was performed in *The Castle Mountain Mine 69kV Power Transmission Line: Detailed Evaluation of Buried Power Cable Alternatives* (October 1991) and *Castle Mountain Mine 69kV Power Transmission Line Environmental Assessment* (July 1991).

Other subsequent approvals relevant to the Proposed Action are: *Underground Exploration Amendment Environmental Assessment* (CA-069-EA4-16); *Comminution Circuit Environmental Assessment* (CA-069-EA2-28); *Castle Mountain's Plant Propagation House Complex Environmental Assessment* (CA-069-P02); and *CMV's Sodium Cyanide Mixing System* (CA-069-P02-NACN/MIXSY).



## Environmental Review Process Castle Mountain Mine Expansion Project

CASTLE MOUNTAIN MINE  
San Bernardino County, California



## 1.0 INTRODUCTION

As the previous project EIS/EIR is relatively recent, the basic evaluations are largely applicable to the proposed modifications to the approved plans. Since the preparation of the Previous EIS/EIR, the Mojave National Preserve has been created, replacing the East Mojave National Scenic Area. However, the Mojave National Preserve is designated as a Preserve rather than a Park to allow a wider range of activities including hunting. Therefore, the documentation of the environmental setting and resources in Lanfair Valley, and of the mine site, are still directly applicable. The Proposed Action and cumulative impact analyses also remain generally valid. In addition, the Castle Mountain Project EIS/EIR evaluated a wide range of alternatives. As a result, these documents listed below serve as an important basis for this EIS/EIR for the mine plan amendments and are hereby incorporated by reference:

- United States Department of the Interior, Bureau of Land Management, and County of San Bernardino. 1989. *Draft Environmental Impact Statement/Environmental Impact Report*.
- United States Department of the Interior, Bureau of Land Management, and County of San Bernardino. 1990. *Final Environmental Impact Statement/Environmental Impact Report*.
- United States Department of the Interior, Bureau of Land Management, and County of San Bernardino. 1990. *Supplement to the Draft Environmental Impact Statement/Environmental Impact Report*.
- The Mark Group. 1990. *Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water*

*Supply to Piute Spring.* Las Vegas. August.

These documents are on file and available for public review at the following locations:

- County of San Bernardino  
Planning Department, 3<sup>rd</sup> Floor  
385 No. Arrowhead Avenue  
San Bernardino, California 92415-0182  
(909) 387-4131  
Hours: 8:00 a.m. to 5:00 p.m.
- County of San Bernardino  
15505 Civic Drive  
Victorville, California 92392  
(619) 243-8245  
Hours: 8:00 a.m. - 12 p.m.  
1:00 p.m. - 5:00 p.m.
- USDI Bureau of Land Management  
Needles Resource Area  
101 West Spike's Road  
Needles, California 92363  
(619) 326-7000  
Hours: 7:30 a.m. - 4:00 p.m.

To avoid redundancy and to efficiently use the relevant evaluations already completed, portions of this EIS/EIR incorporate the previous work in summary and by reference, primarily for the environmental setting, and for mitigation measures already incorporated into mining operations. In addition, certain environmental issues were previously addressed and would not change as a result of the proposed modifications. Scoping for the current environmental issues to be evaluated, therefore, incorporated review and use of the Previous EIS/EIR.

## Previous EIS/EIR Consideration of Potential Expansion

The Previous EIS/EIR for the Castle Mountain Project evaluated, to the degree feasible at that time, the potential for future project expansion and/or modification as part of the cumulative impacts analysis (USDI, BLM, and County, 1990a). While it was anticipated that mineralization could occur elsewhere in the Castle Mountains, it was recognized that available engineering and other information on geologic conditions indicated that extended mining activities would most likely occur in proximity to the known deposits. The EIS/EIR identified the types of occurrences that could precipitate such modifications, including:

- Discovery or exposure of unique ore that requires specialized processing,
- Discovery of deep, high-grade ore with underground mining potential,
- By-product sales such as clay or crushed aggregate,
- Plant modifications to enhance recovery, and
- Site boundary expansion to mine a satellite discovery.

In an effort to broadly consider potential cumulative effects, the Previous EIS/EIR speculated on these hypothetical modifications (including developing expanded ore reserves, and operation beyond 10 years) and considered the environmental effects. In considering the discovery of additional economic mineralization, the Previous EIS/EIR estimated that if such an expansion were to increase the site disturbance by

40 percent (to approximately 1,250 acres), the expansion could involve:

a new mine pit, overburden disposal area, haul roads, and expanded heaps but that manpower requirements, average daily trips for the transport of employees and operating supplies, daily water requirements, air quality, and wildlife exposure would remain essentially the same.

Operation of the mine beyond the initially proposed 10 years was cited as a possibility resulting from one or more of the following circumstances:

- Actual mineable reserves at the site exceed the best estimates now available.
- Increased gold prices, resulting in a reduced cutoff grade and increased reserves.
- Improved mining and processing efficiencies or recoveries, resulting in favorable economics for the treatment of lower grade ore.

The Previous EIS/EIR stated that:

... the most likely scenario for an extended mine life would be to process any additional ore reserves at the production rate for the Proposed Action. Efficient operation can best be achieved by utilizing the crushing and gold extraction facilities at full capacity.

The EIS/ EIR further identified the potential environmental issues and general types of impacts that could be expected.

The Previous EIS/EIR therefore recognized and addressed, to the degree possible, the potential for mine expansion and/or modification and the types of environmental impacts that could be expected to add cumulatively to the proposed Castle Mountain Mine. The plan amendment modifications currently proposed are generally consistent with that previously hypothesized scenario.



## 1.0 INTRODUCTION

The proposed activities are a logical progression of the previous project which were cumulatively considered for environmental effects. The scope of environmental issues for such an expansion were preliminarily identified in the Previous EIS/EIR.

### Scoping Process

The scope of this EIS/EIR encompasses evaluations of the environmental resources that could be affected, either directly, indirectly, or cumulatively by the Proposed Action. The Proposed Action would involve both the expansion of facilities, and the extended operation of an existing mine. The scope of environmental issues addressed has been identified based on: (1) review of the previous environmental documentation completed for initial mine development; (2) preliminary evaluation by the BLM and County of the applications for mine plan amendments; (3) public and agency notifications and written comments received; and (4) public scoping meetings.

The process undertaken for determining the scope of environmental issues to be addressed in this EIS/EIR included public involvement, as required by implementing regulations of NEPA and encouraged by CEQA. Scoping was undertaken to identify the range of actions, alternatives, and impacts and mitigation measures associated with the Proposed Action to be analyzed in depth in the EIS/EIR. The public scoping process was designed to solicit comments from the general public and from local, state, and federal governmental agencies, and included the following steps:

- BLM Notifications:
  - Notice of Intent (NOI) to complete an EIS on the Proposed Action, published in the Federal Register by the U.S. Environmental Protection Agency (EPA) on July 18, 1995 requesting comments on the issues to be addressed within a 30-day period.
  - A second NOI was published in the Federal Register in response to a request made by The Wilderness Society, on August 29, 1995. No additional comments were received.
  - Approximately 650 "response requested" cards were sent to organizations and individuals according to the BLM's previous mailing list for the "Castle Mountain Project" to update that list.
  - Direct mailing of approximately 550 notices for the public scoping meetings for the mine plan amendments were sent to interested respondents.
- County Notifications:
  - Notice of Preparation (NOP) to prepare an EIR on the Proposed Action, published by the County of San Bernardino. The NOP was sent to state agencies, surrounding property owners, and other interested individuals according to the County's mailing list, on July 21, 1995, requesting comments within a 30-day period on the issues to be addressed.

- Joint BLM and County Meetings:
  - Notices of the public scoping meetings, published in four newspapers of local and regional distribution (*San Bernardino Sun*, *Barstow Daily Dispatch*, *Las Vegas Sun*, and *Las Vegas Review Journal*) on July 23, 1995 and July 30, 1995.
  - Two scoping meetings were held, as published by the direct mailing letter and the newspaper notices, one in Searchlight, Nevada on August 2, 1995, and the other in Barstow, California, on August 3, 1995. A total of 11 individuals attended the two meetings.

Copies of the above notices and mailings are included in Appendix A. Comment letters received and results of the public scoping process are contained in Appendix B.

## Issues of Concern

The scoping process resulted in the following list of potential environmental consequences from the proposed mine plan modifications:

- **Geology:** Mine pit wall stability, overburden stockpile stability
- **Water Resources:** Extended mine life and water use effects on Lanfair Valley aquifer, monitoring of Piute Spring, groundwater protection from mine process activities, consequences of water seepage into the mine pit
- **Vegetation:** Impact to vegetation as a result of expanded area and extended period of operation, impact to sensitive species

- **Wildlife:** Impact to wildlife and habitat as a result of expanded area and extended period of operation, impact to sensitive species as a result of expanded area and extended period of operation
- **Air Quality:** Fugitive dust (PM<sub>10</sub>) from new mining areas and longer haul roads
- **Visual Resources:** Changes to views as a result of mine expansion and extended period of operation
- **Cultural Resources:** Impacts to pre-historic resources, impacts to historic resources of the Hart townsite
- **Land Use:** Impact of extended period of operation on other surrounding uses, relationship to Mojave National Preserve
- **Hazards:** Potential effects of continued use of reagents for extended period of operation

These issues focus specifically on the anticipated additional environmental effects, and are generally either reconsideration of, and/or a subset of, the environmental issues evaluated in the Previous EIS/EIR. As the proposed mine modifications would employ the same technology and operating methods as the existing mine, no new types of impacts or effects to a new environmental resource are expected, with the exception of impacts to historic resources of the Hart townsite. Since the proposed mine modifications would not alter the approved rate of mining and processing, no increase in annual water use, air emissions, traffic or employees would result.



## 1.0 INTRODUCTION

The analysis of water use will focus on the extended duration of mine operation and other effects. The air analyses will address expanded surface disturbances and changed haul distances producing particulate emissions (PM<sub>10</sub>). The additional surface disturbances and related habitat effects to vegetation and wildlife will be examined, and the changes to the aesthetics evaluated. Development of an additional overburden disposal area will cover the previously mined clay quarries, but also much of what remains of the Hart townsite, an early twentieth-century boom-bust mining town that flourished for approximately 3 to 5 years. A detailed archaeological assessment of this impact is being undertaken through the federal Section 106 process and the NEPA - CEQA process for this EIS/EIR.

The proposed mine plan amendments would not result in increased employment, but would maintain existing level of employment for several additional years: socioeconomics (addressed in the Previous EIS/EIR) has therefore been eliminated from further consideration. The mine's infrastructure, also addressed in the Previous EIS/EIR, consisting of the access road and utilities, are in place and would not be altered for the mine plan amendments. The operation is self-sufficient and does not rely on public services; infrastructure has therefore been eliminated from additional consideration.

### Areas of Controversy

CEQA Guidelines §15123(b)(2) requires a discussion of areas of controversy known to the lead agency, including issues raised by agencies and the public. The following areas of controversy have been identified through the scoping process and are addressed in Chapter 3.0 of this Draft EIS/EIR:

- Compatibility of the mine with the Mojave National Preserve,
- Changes in the frequency of Piute Spring Monitoring, and
- Visual effects of expanded operations.

## 1.2 PURPOSE AND OBJECTIVES OF PROPOSED ACTION

### 1.2.1 Background and Need

Federal policy favors maintaining a viable mining industry for the development of domestic mineral resources. To help assure satisfaction of the nation's industrial and security needs, federal policies encourage private enterprise in the economic development of domestic mineral resources. The Mining Law of 1872 (30 USC 22 *et seq.*) opened the public lands to exploration and development, granting a person who discovers valuable mineral deposits the right to extract and sell these minerals. This policy was reaffirmed in the Mining and Minerals Policy Act of 1970 and the National Materials and Minerals Policy, Research and Development Act of 1980. The 1970 legislation stated that an "economically sound" mining industry was important for both economic and national security reasons. The 1980 Act noted the need to encourage mineral exploration, specifically recognizing the need for mineral exploration.

Consistent with these federal policies, the Castle Mountain Mine was developed after many years of exploration and evaluation. The mine was permitted in late 1990, subsequent to extensive environmental

documentation and agency and public scrutiny. The mine is currently the third largest producer of gold in California, providing year-round employment for a work force of over 200. Secondary employment is also realized through the nearly \$8,000,000 in annual expenditures for goods and services in the region. The operation is self-sufficient, providing its own water, sewerage and sanitation services, trash disposal and access road maintenance. Viceroy Gold Corporation, the Operator of the mine, is a wholly owned subsidiary of Viceroy Resource Corporation, a publicly held company that owns a 75 percent interest in the mine. The remaining 25 percent interest in the mine is owned by MK Gold Company, a publicly held mining company that also provides contract mining services for the Castle Mountain Mine. In excess of \$80 million was invested in exploring, permitting, and constructing the mine. An additional \$52 million has been invested since operations commenced in the spring of 1992.

In the absence of expanding the orebody, mining of existing reserves would continue until sometime in 1997. At that time, all ore covered by existing permits will have been mined. Processing approximately 1.5 million tons of material stockpiled during the previous 6 years of mining would extend this aspect of the operation for perhaps 6 to 12 months, but in the absence of extended permits to mine and process the additional ore discoveries, project decommissioning and final reclamation would begin in about 1998 to 1999.

### 1.2.2 Basic Objectives

CEQA Guidelines Section 15126(d) requires that an EIR "describe a range of reasonable

alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." For this reason, the objectives of the project are identified here, to allow assessment of the feasibility of alternatives analyzed in this document.

The initial Castle Mountain Mine was designed and permitted to develop all of the known ore bodies that could feasibly be mined at foreseeable mining costs and gold prices. Since 1990, ongoing drilling has resulted in the discovery of additional ore reserves not previously known. The overall goals of the proposed expansion are to maximize use of known resources:

- Maximize existing onsite facilities, equipment and personnel,
- Maximize the return on capital investments, and
- Fully develop these additional rare and economically valuable ore reserves.

Related objectives include:

- Develop newly discovered ore reserves from ongoing exploration in close proximity to existing permitted and constructed processing facilities, to provide optimum efficiency and economy of operation;
- Focus surface disturbances within the existing project site by using previously constructed processing facilities and ancillary facilities;



## 1.0 INTRODUCTION

- Provide for a 10-year extension to the operating entitlement (until approximately 2020) to mine the available resources in accordance with lease agreements, and foreseeable mining and reclamation plans;
- Provide for continued employment of approximately 200 people, as well as indirectly supporting regional employment through purchases of goods and services;
- Provide continued use and funding to support the onsite greenhouse, nursery, and the ongoing arid lands revegetation research;
- Implement a reclamation program designed to minimize erosion, reestablish vegetation and wildlife habitat, and mitigate the aesthetic impacts created by mining; and
- Plan for future changes in gold prices by designing for maximum ore and overburden areas under reasonably foreseeable conditions.

**CHAPTER 2.0**  
**DESCRIPTION OF PROPOSED**  
**ACTION AND ALTERNATIVES**

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## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

### **2.1 RELATION OF PROPOSED ACTION TO EXISTING OPERATIONS**

#### **2.1.1 Site Location and Access**

The Castle Mountain Mine is located in the Hart Mining District of San Bernardino County, approximately 100 miles east of Barstow, California, and approximately 70 miles south of Las Vegas, Nevada, as shown in Figures 2.0-1 and 2.0-2. The district is an area of historic gold and clay mining activity on the southwest flank of the Castle Mountains in Lanfair Valley. Much of the region within which the mine is located is public land managed by the Needles Resource Area office of the US Bureau of Land Management (BLM) as part of the California Desert Conservation Area (CDCA) in California. The Stateline Resource Area office of the BLM in Las Vegas, Nevada manages the public lands in Nevada north and east of the mine; approximately 10 miles of the mine access road are located in Nevada. The Mojave National Preserve, which was designated by Congress in October 1994 as part of the California Desert Protection Act, covers approximately 1.5 million acres in eastern California, including much of the former East Mojave National Scenic Area. Viceroy's claim block is excluded from the Mojave National Preserve, and the public lands occupied by Viceroy's claims continue to be managed by the BLM. Approximately 38,000 acres of private lands also exist throughout Lanfair Valley. Portions of the site are on private lands which are patented

mine claims associated with the historic gold district and clay mining.

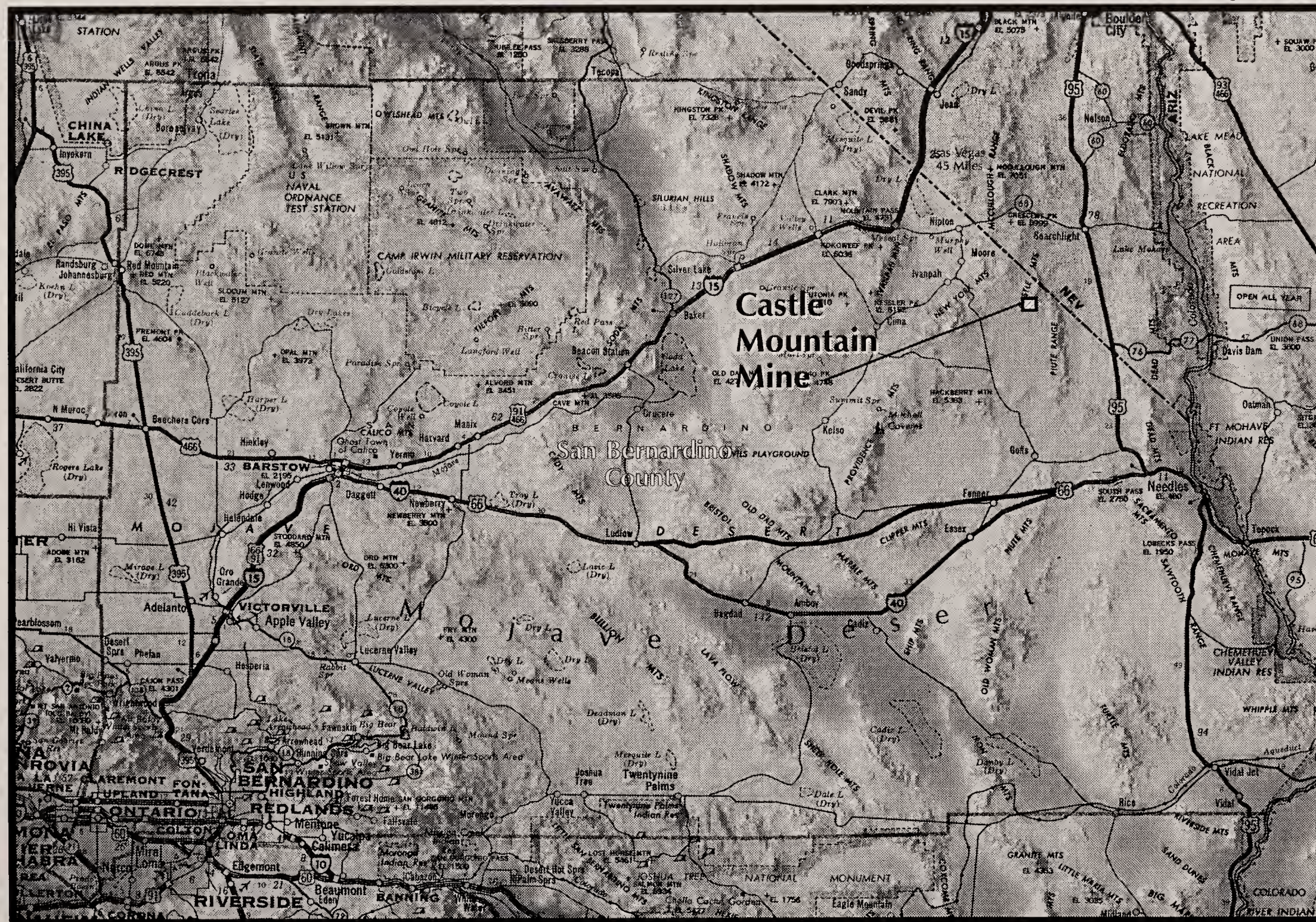
The primary access to the mine is via the 18-mile mine access road, which connects to Nevada State Route 164 (NSR 164) north of the mine as shown on Figure 2.0-2. NSR 164 is accessed via either Interstate 15 (I-15) from the Ivanpah Valley in California to the west, or US Highway 95, from the Piute Valley in Nevada to the east.

#### **2.1.2 Permitted Mine Layout and Operations Overview**

The following is a very brief overview of the major elements of the existing Castle Mountain Mine. The purpose of this section is to familiarize the reader with the existing mine, so that the addition of the Proposed Action can be best understood. Details of the existing operation are provided later in this chapter, in Section 2.2.6 (Integration with Existing Facilities and Operations).

The existing mine operates based on an approved site plan for surface disturbances covering up to approximately 890 acres. Approximately 545 acres of surface disturbances have occurred to date. The mine site encompasses 2,735 acres, comprised of approximately 2,620 acres of federal lands with unpatented mining claims, and 115 acres of private lands patented under the mining laws. The existing operation is an open pit heap leach gold mine, using established methods common to the industry. The operation mines rock (consisting of ore and





# Legend

- State Boundary
- County Boundary
- Interstate
- U.S. Highway
- State Highway
- Dry Lake



0 25  
Scale: 1"=25 Miles

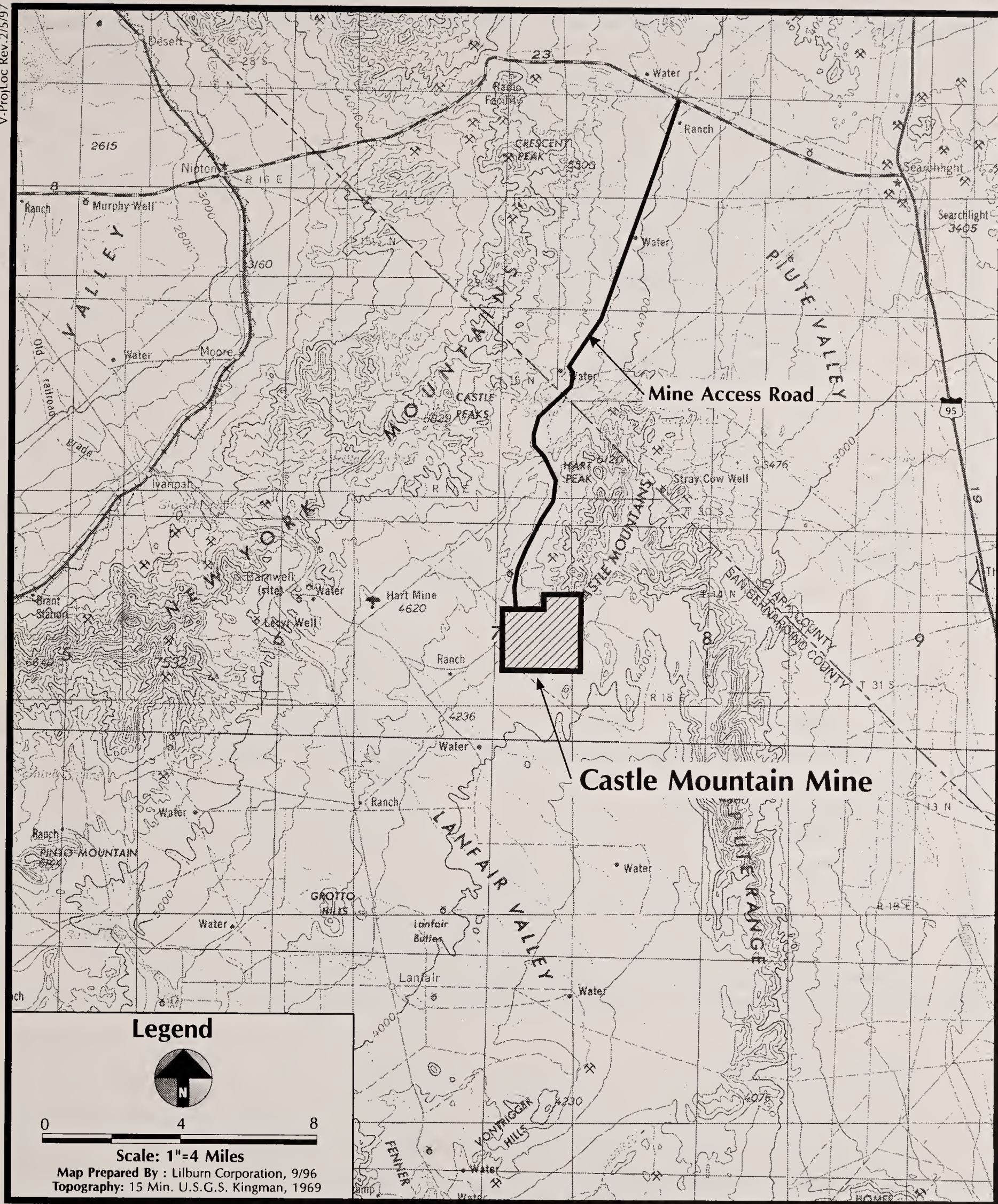
Map Prepared By:  
Lilburn Corp., 1996

## Regional Location

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-1





## Site Location and Access

CASTLE MOUNTAIN MINE  
San Bernardino County, California

### Figure 2.0-2



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

unmineralized rock) at rates of up to 18 million tons per year. Ore is processed for gold extraction at an average rate of 4.1 million tons of ore per year. The existing operations (including reclamation) are permitted until the year 2010. Major components of the existing facility include the mine pits, overburden storage sites, crushing facilities, heap leach pads, solution storage tanks, processing plant, utilities and equipment, as shown in Figure 2.0-3.

### Mine Pits

Three mine pits, known as the Oro Belle, Lesley Ann and Jumbo, are currently permitted to be mined to a maximum depth of approximately 600 feet over an area of approximately 135 acres. Their current pit depths are approximately 620 feet, 80 feet and 180 feet, respectively. Current mining operations have removed nearly 60 million tons of overburden and 30 million tons of ore.

### Overburden Site and Crusher

Unmineralized rock is hauled by truck to the South Overburden Site. The South Overburden Site is currently at a height of approximately 180 feet and currently holds approximately 37.4 million tons of overburden. The current acreage of the South Overburden Site is approximately 205 acres. Ore is stockpiled nearby or fed directly to the crusher, where it is crushed to 80 percent passing 3/8 inch in size.

### Heap Leach Pads

Crushed ore is transported to the currently permitted heap leach pads via conveyor. "Lifts" of ore are loaded onto synthetic liners and leached with a dilute cyanide solution delivered through a drip irrigation system. The currently approved heap leach pads would

occupy approximately 330 acres at completion.

### Solution Storage and Gold

#### Recovery

Process solution is distributed through the ore by drip irrigation, and flows from the heap leach pad into pipes by gravity to the solution storage area, where it is stored in welded steel tanks. Solution is processed to recover gold using carbon adsorption and electrowinning methods. The process solutions are recirculated for continued use at the heap leach pads. Make-up water is added as necessary to compensate for evaporation and moisture retained in the heap.

#### Water Supply

Water, used primarily for the heap leach process and dust control, is supplied from a well field area located approximately 12,000 feet northwest of the operations area. Water is stored onsite in a single, 250,000-gallon steel tank. Average annual water use was expected in the Previous EIS/EIR to average approximately 725 acre-feet (approximately 450 gpm), ranging from approximately 390 gpm in the winter, to 495 gpm in the summer. Actual water consumption has been considerably less, averaging only about 400 acre-feet per year since operations commenced.

#### Power Supply

Power is used primarily for the crushing and conveying units, process plant and comminution circuit, solution circulation pumps and groundwater well pumps, the office, and mine shop facilities. Power is supplied via a 69kV electric power line that parallels the mine access road between the mine site and NSR 164.







## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

### Reclamation

Reclamation is conducted concurrently with ongoing operations, where possible, and is completed in accordance with the approved Reclamation Plan schedule. Revegetation activities to date include removal, stockpiling and management of growth media; plant salvage; greenhouse and nursery establishment; outplanting of salvaged and greenhouse grown plants; and overburden, heap leach, and road sites prepared for revegetation. Approximately 20 acres have been prepared for revegetation, including the South Clay Pit, exploration drill roads, and portions of the South Overburden Site. Reclamation of the South Clay Pit Reclamation Area included the placement of darker colored overburden to reduce color contrasts. Revegetation on final slopes has been initiated. Final reclamation will occur at the conclusion of mine operations, in accordance with requirements of the approved Reclamation Plan.

## 2.2 PROPOSED ACTION

This description of the Proposed Action is based on the Plan Amendment Application (Application) for the Castle Mountain Mine (Viceroy, 1995). As described in the Application, virtually all elements of the existing operation would be retained and operations would continue at the current processing rate and hours of operation. Mining and processing activities would be generally modified as follows:

- **Period of Operations**

- Extension of the life of the mine by approximately 10 years.

- **Site Plan Modifications**

- Modification of site boundaries to correlate with claim block boundaries to incorporate certain private lands, and provide an enlarged buffer area surrounding mine facilities.
- Expansion of mining areas to include 175 acres for development of additional identified ore reserves.
- Development of a 205-acre overburden storage site and associated haul roads.
- Consolidation of the permitted locations of the heap leach pads into a single large pad (420 acres), and associated storage basins.
- Potential conversion of an exploration road into the Mine Reclamation Plan to a mine site overlook for the East Mojave Heritage Trail.

- **Modifications to Conditions and Stipulations**

- Modification of rock pit high wall staining requirement.
- Eliminate *Penstemon stephensii* condition.
- Reduction of the frequency of surface water monitoring at Piute Spring.
- Expand text of vegetation salvage requirement to clarify program requirements.

Each of these proposed modifications is described in the following sections. The modifications are collectively referenced as the Proposed Action (plan amendments or Plan Modifications).

### 2.2.1 Period of Operations

The existing permits and mine Reclamation Plan incorporate a 10-year operational phase followed by a 10-year reclamation phase and are scheduled to expire on December 31, 2010. It is proposed that the mine operating phase be extended until December 31, 2020, to allow an additional 10 years to mine and process the additional ore reserves. The originally planned 10-year reclamation period at project completion would be retained, but rescheduled to occur after the additional mining activities are completed.

### 2.2.2 Site Boundary

The original site boundaries delineated for purposes of the Previous EIS/EIR encompassed 2,735 acres; approved surface disturbances encompassed approximately 890 acres within this site. The 150-acre Milma Patent area was purchased by Viceroy in December 1990. The Previous EIS/EIR required Viceroy to incorporate reclamation of the North Clay Pit (located at the Milma Patent) into the Mine and Reclamation Plan. The revised plan would formally add the Milma Patent area to the site plan.

In addition to adding the 150-acre Milma Patent, it is proposed to realign portions of the existing east, north, and west boundaries of the site, to better correspond to land ownership and claims. This would change the site area to 3,910 acres, 265 acres of which are private lands, and 3,645 of which are public

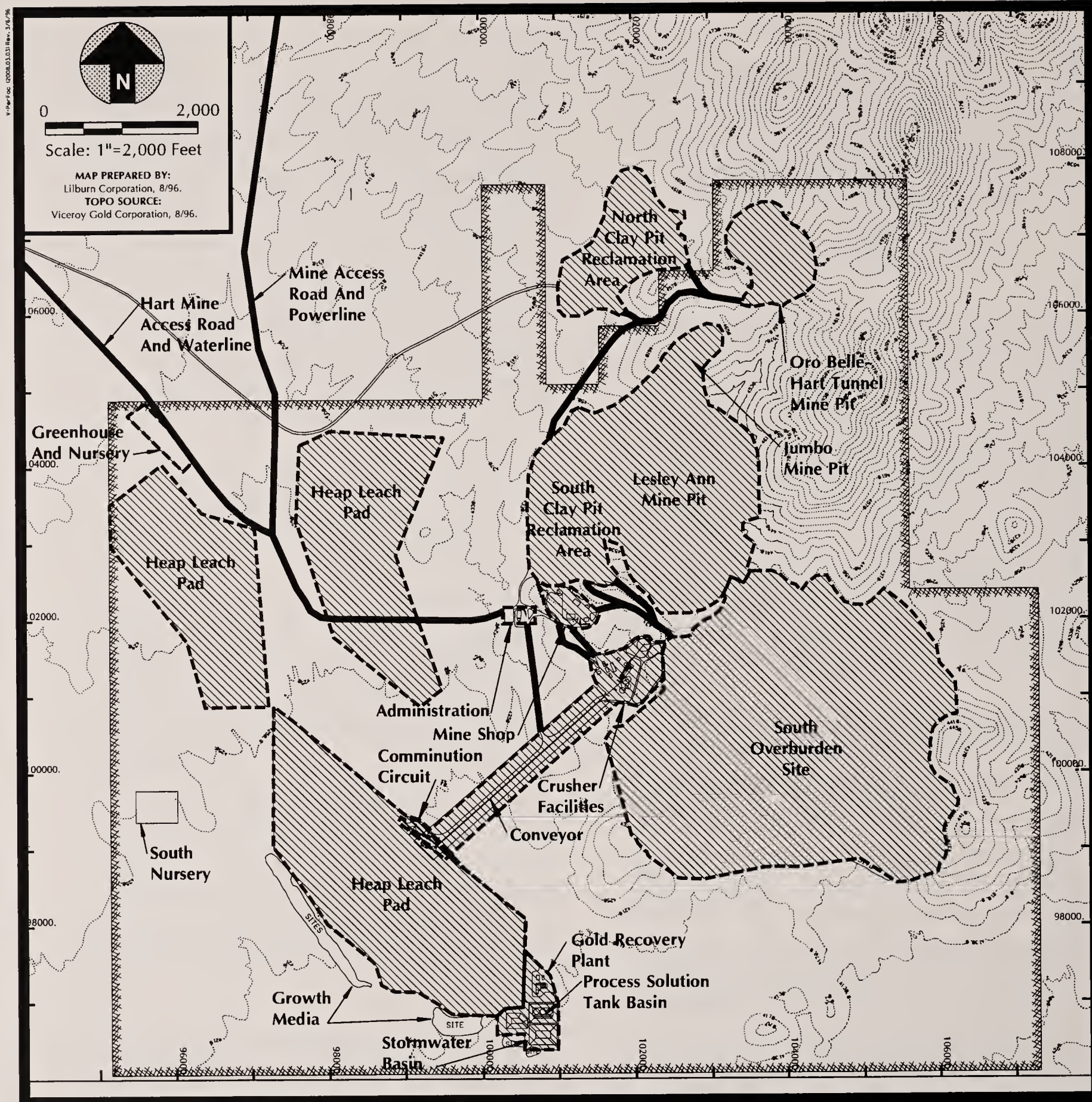
lands. Adjusting the site boundaries in this manner would also provide for a safety buffer zone between publicly-accessible land and mine operations. The currently permitted layout is shown in Figure 2.0-4. The revised area does not affect the scope of actual surface disturbances planned in the operations areas, nor the environmental effects of the project. Fencing would be extended, as needed, to surround the expanded operations areas. The revised site boundaries are shown in Figure 2.0-5.

### 2.2.3 Mining, Overburden, and Heap Leach Facilities Modifications

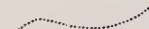
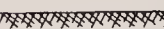



The permitted facilities layout includes approximately 890 acres of surface disturbance area designed for the production and processing of approximately 30 million tons of ore. Current mining operations have disturbed approximately 545 acres. Under the current permit, virtually all available ore would be mined by mid-1997. Processing of the stockpiled low-grade ore would continue through the year 2000. Under such a scenario, the amount of surface disturbance may be less than the 890 acres currently permitted.

With total reserves now identified at approximately 71 million tons of ore, additional area is needed for mining, overburden storage, and ore processing. Expansion of the mine areas and heap leach pads, and addition of a North Overburden Site extending southwards from the Milma Patent, would result in a modified project layout. Table 2.0-1 shows the comparative acreage of the various mine components. Table 2.0-2 shows the comparative acreage of the various mine components with respect to the land





## Legend

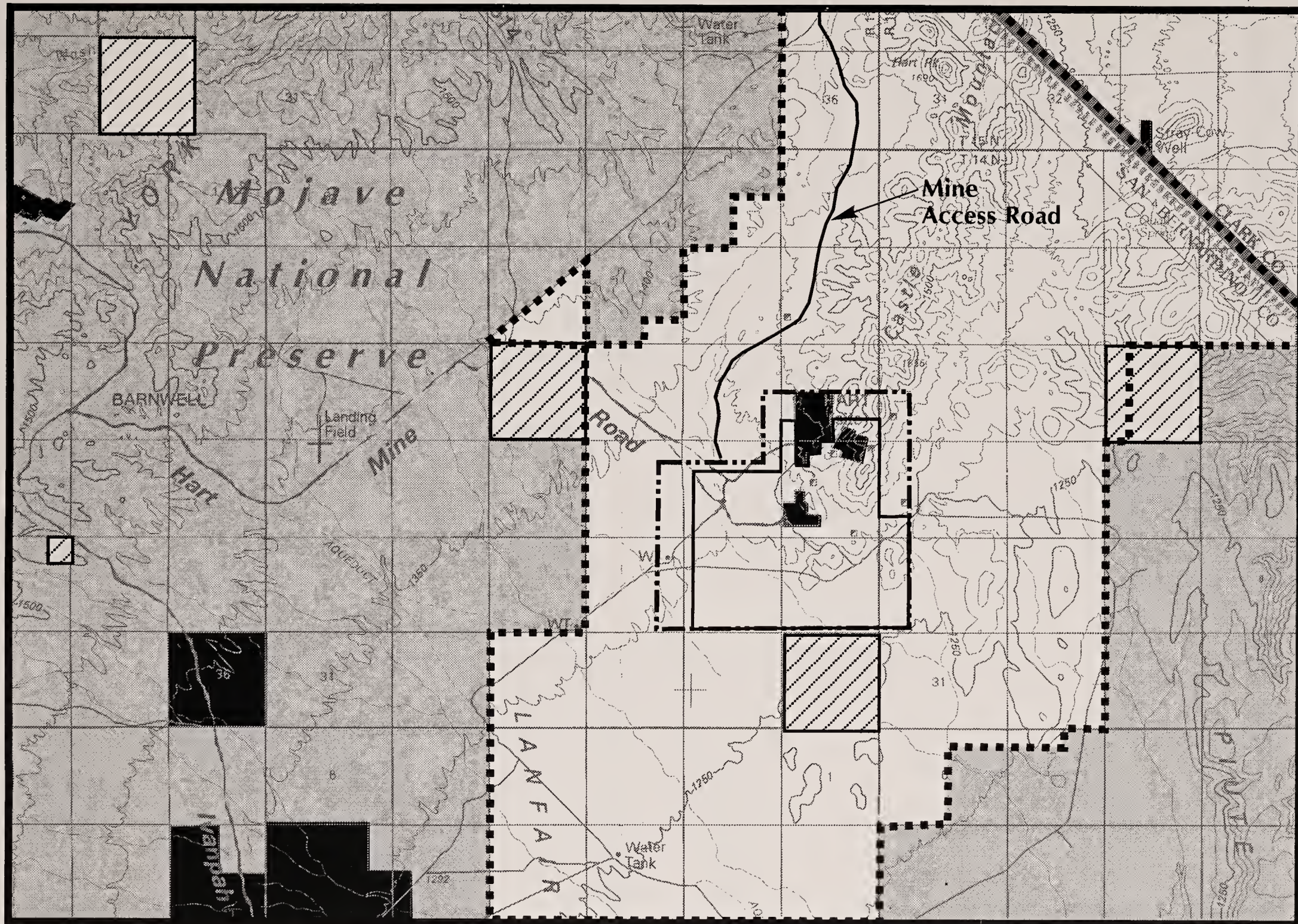
-  Existing Topography
-  Site Boundary
-  Permitted Facilities (1990)
-  Access and Haul Roads
-  Other Roads

Facility	Acres
Pits.....	135
Overburden Storage Sites.....	300
Leach Pads.....	330
Growth Media Piles/Nurseries.....	70
Roads.....	30
Crushing Area, Administration Building, Parking, Mine Contractor's Shop, Warehouse.....	15
Process And Basin Areas.....	10
<b>TOTALS</b>	<b>890</b>

## Permitted Facilities Areas



2-9



**Legend**

- Existing Site Boundary
- Amended Mine Site Boundary
- Viceroy Claims Boundary
- Public Lands (BLM Administered)
- Patented and/or Private Lands
- State Lands
- Public Lands (NPS Administered)

San Bernardino County

Not To Scale

0 2 Miles

Map Prepared By:  
Lilburn Corp., 1996

**Land Ownership and Site Boundary Modifications**

CASTLE MOUNTAIN MINE  
San Bernardino County, California

**Figure 2.0-5**



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

<b>TABLE 2.0-1 EXISTING, PERMITTED, AND PROPOSED SURFACE DISTURBANCE</b>				
<b>Facility</b>	<b>Existing Conditions<sup>(1)</sup> (acres)</b>	<b>Permitted Operation (acres)</b>	<b>Increase Resulting From Proposed Action<sup>(2)</sup> (acres)</b>	<b>Total Surface Disturbance (acres)<sup>(2)</sup></b>
Mine pits	110	135 (135) <sup>(3)</sup>	175 (35) <sup>(3)</sup>	310 (170) <sup>(3)</sup>
Overburden storage sites	205 (255) <sup>(4)</sup>	300 (385) <sup>(4)</sup>	205 (205) <sup>(4)</sup>	505 (590) <sup>(4)</sup>
Leach pad area	150	330	90	420
Growth media storage/nurseries	25	70	-10	60
Roads	30	30	20	50
Crushing area, administration building, parking, mine shop, warehouse	15	15	0	15
Process and stormwater basin areas	10	10	10	20
<b>TOTAL</b>	<b>545</b>	<b>890</b>	<b>490</b>	<b>1,380 (1,465)<sup>(5)</sup></b>

**NOTES:**

- (1) Approximate status of mine development in March, 1996 (through Stage 5A). Refer also to Figure 2.0-3. Numbers rounded to the nearest 5 acres.
- (2) Gross acreage, as compared to permitted operation. Numbers rounded to the nearest 5 acres.
- (3) Total mined area (open pit area at conclusion of mining). Approximately 140 acres of mine pits are planned to be backfilled. Numbers rounded to the nearest 5 acres.
- (4) Designated overburden sites (overburden areas plus clay pit reclamation areas). Approximately 85 acres of overburden placement are backfill over previously mined clay quarries (North and South Clay Pit Reclamation Areas) and are not additional surface disturbance. Numbers rounded to the nearest 5 acres.
- (5) Total surface disturbance area (total operations areas including clay pit reclamation areas).

**TABLE 2.0-2  
SURFACE DISTURBANCE AND LAND OWNERSHIP BY MINE FACILITY**

Facility	Existing Conditions <sup>(1)</sup> (acres)		Permitted Operation <sup>(2)</sup> (acres)		Increase Resulting From Proposed Action (acres)		Total Surface Disturbance (acres)	
	Patented Claims	Unpatented Claims	Patented Claims	Unpatented Claims	Patented Claims	Unpatented Claims	Patented Claims	Unpatented Claims
Mine pits	100	10	106	29	137	38	243	67
Overburden sites	216	39	311	74	151	54	462	128
Leach pad area	150	0	330	0	90	0	420	0
Growth media storage/nurseries	25	0	70	0	-10	0	60	0
Roads	18	12	25	5	19	-1	44	4
Crushing area, administration building, parking, mine shop, warehouse	11	4	11	4	0	0	11	4
Process and stormwater basin areas	10	0	10	0	10	0	20	0
<b>TOTAL SURFACE DISTURBANCES</b>	<b>530</b>	<b>65</b>	<b>863</b>	<b>112</b>	<b>397</b>	<b>91</b>	<b>1,260</b>	<b>203</b>

## NOTES:

- (1) Through March 1997  
 (2) Data includes clay pit reclamation areas (85 acres)

Source: Viceroy Gold Corporation



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

management authority. The changes that would result from the modifications are compared to the existing site layout in Figure 2.0-6.

As a result of these changes, the onsite acreage proposed for disturbance would increase by 490 acres, to an estimated mine site total of 1,380 acres at completion. The details for each major facility area to be modified are discussed in the following.

### *Mine Areas and Operations*

Open pit areas include the now-completed Lesley Ann Pit, and the Oro Belle and Jumbo pits (refer to Figure 2.0-3). Ongoing drilling has resulted in the discovery of additional ore in the Hart Tunnel deposit (located southeast of the Oro Belle and northeast of the Lesley Ann Pits), and the South Extension (located adjacent to the south wall of the Lesley Ann Pit), shown in Figure 2.0-3. A photograph of the Lesley Ann Mine Pit is shown in Figure 2.0-7. Additional photographs of the expanded mine pit area including the Hart Tunnel Mine Pit area are shown in Figure 2.0-8.

The proposed 175-acre increase in the mine pit area to 310 acres would increase the quantities of material that could be mined from the permitted 30 million tons of ore and 60 million tons of overburden to a total of 71 million tons of ore and 221 million tons of overburden. This additional material would be generated by enlarging the Oro Belle and Jumbo Pits beyond their presently authorized perimeters, and by the excavation of the Hart Tunnel and South Extension Pits. Table 2.0-3 shows that production and operation life summary for the currently permitted and proposed extensions to mine areas. Preliminary mine pit plans and profiles are

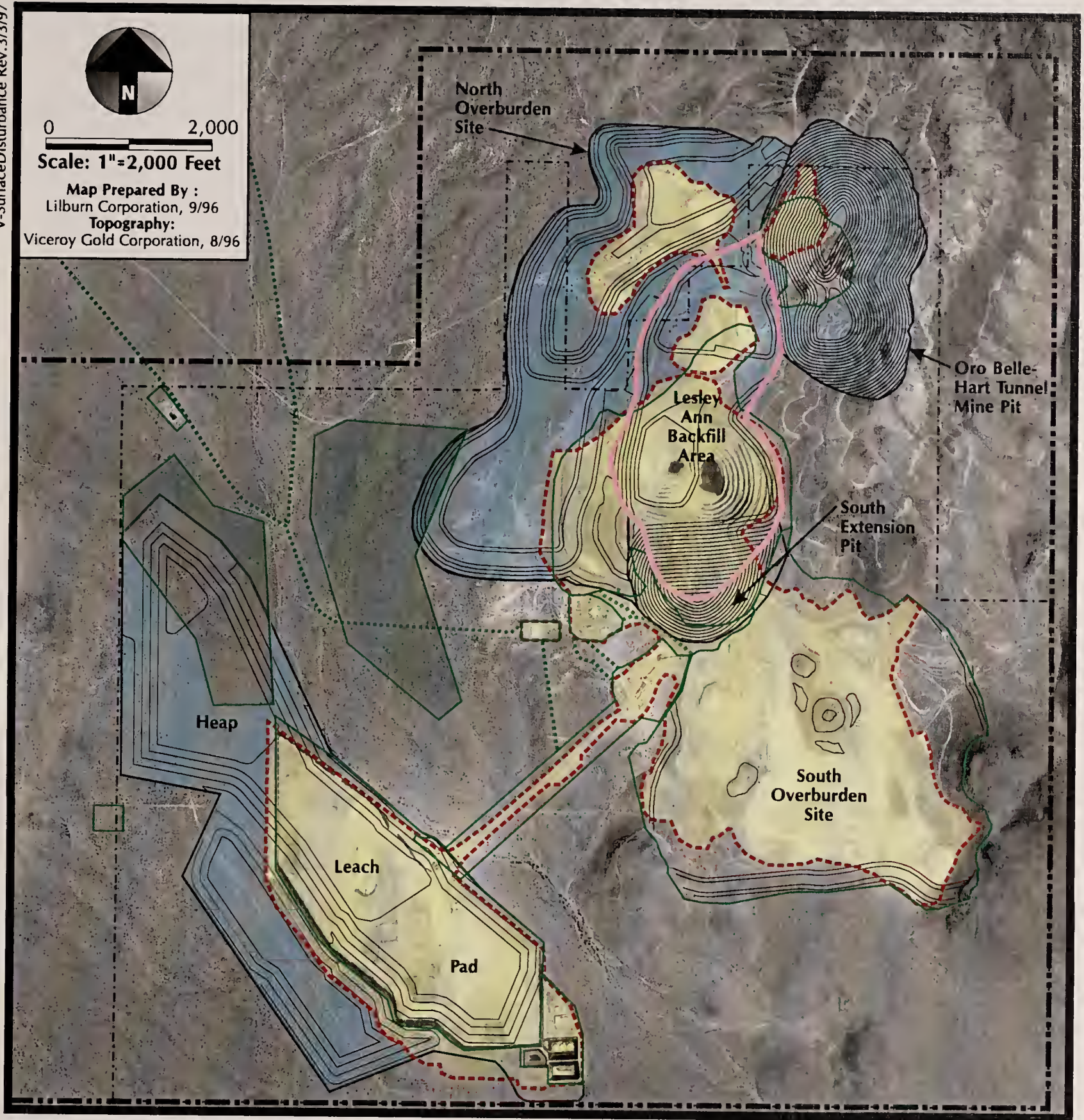
shown in Figures 2.0-9 and 2.0-10. As can be seen from these figures, the Oro Belle and Hart Tunnel deposits are mined from a single elongated pit, with two pit floors. Similarly, the South Extension Pit overlaps into the Lesley Ann Pit.

Consistent with the existing operation, bench heights of 20 feet are proposed, with a 30- to 35-foot wide safety bench at every third or fourth bench. Pit wall slopes are designed at 52 degrees. This is consistent with the slopes of the Lesley Ann Pit, originally designed at 45 degrees, but subsequently steepened to 54 degrees due to the high competence of the rock. After the first several benches have been mined in the new pits, pit slopes for the proposed expansion may be further steepened to 54 degrees, based on various factors, including the competence of the wall rock, absence of faulting, and safety considerations.

Existing engineering data provides a basis for making a detailed forecast of annual production from the expanded Oro Belle, Hart Tunnel, and Jumbo Pits. The level of detailed pit engineering data needed to develop that information for the South Extension deposit will not be generated for several years.

The quantity of materials mined annually is governed by the overburden removal ratio. Approximately 4.1 million tons of ore per year are planned to be delivered to the primary crusher. This will require that up to 18 million tons of material be mined each year, equivalent to existing operations. Mining, exclusive of processing and other operations, is scheduled for a maximum of two 10-hour shifts, 6 to 7 days per week; mining does not exceed 120 hours per week.





## Proposed Modifications to Areas of Surface Disturbance



Photograph: Lilburn Corporation Date: 11/96



Lesley Ann Mine Pit. View of backfill on northwest wall.

Photograph: Lilburn Corporation Date: 11/96



Lesley Ann Mine Pit showing color of highwall (at right). View north.

## Lesley Ann Mine Pit Photographs



Date: 11/96

Photograph: Lilburn Corporation



Proposed Oro Belle-Hart Tunnel mine pit area. Lesley Ann pit (center) is completed, Jumbo pit (right) is under development. Heap leach facilities at top center. View south.

Date: 11/96

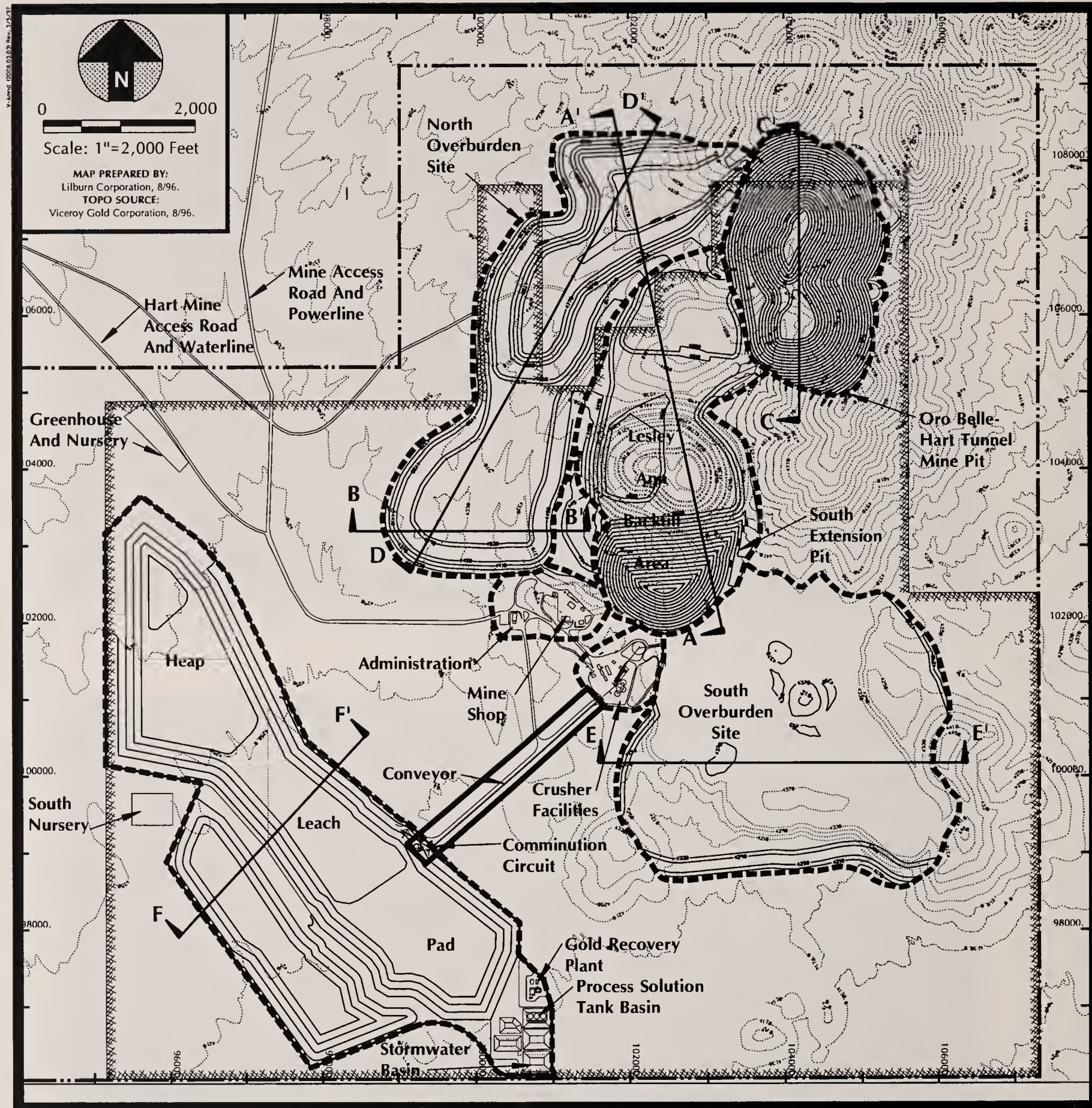
Photograph: Lilburn Corporation



Proposed Oro Belle-Hart Tunnel mine pit area. Active mining at top left is Oro Belle pit development. View west.

## Proposed Mine Pit Area Photographs





## Legend

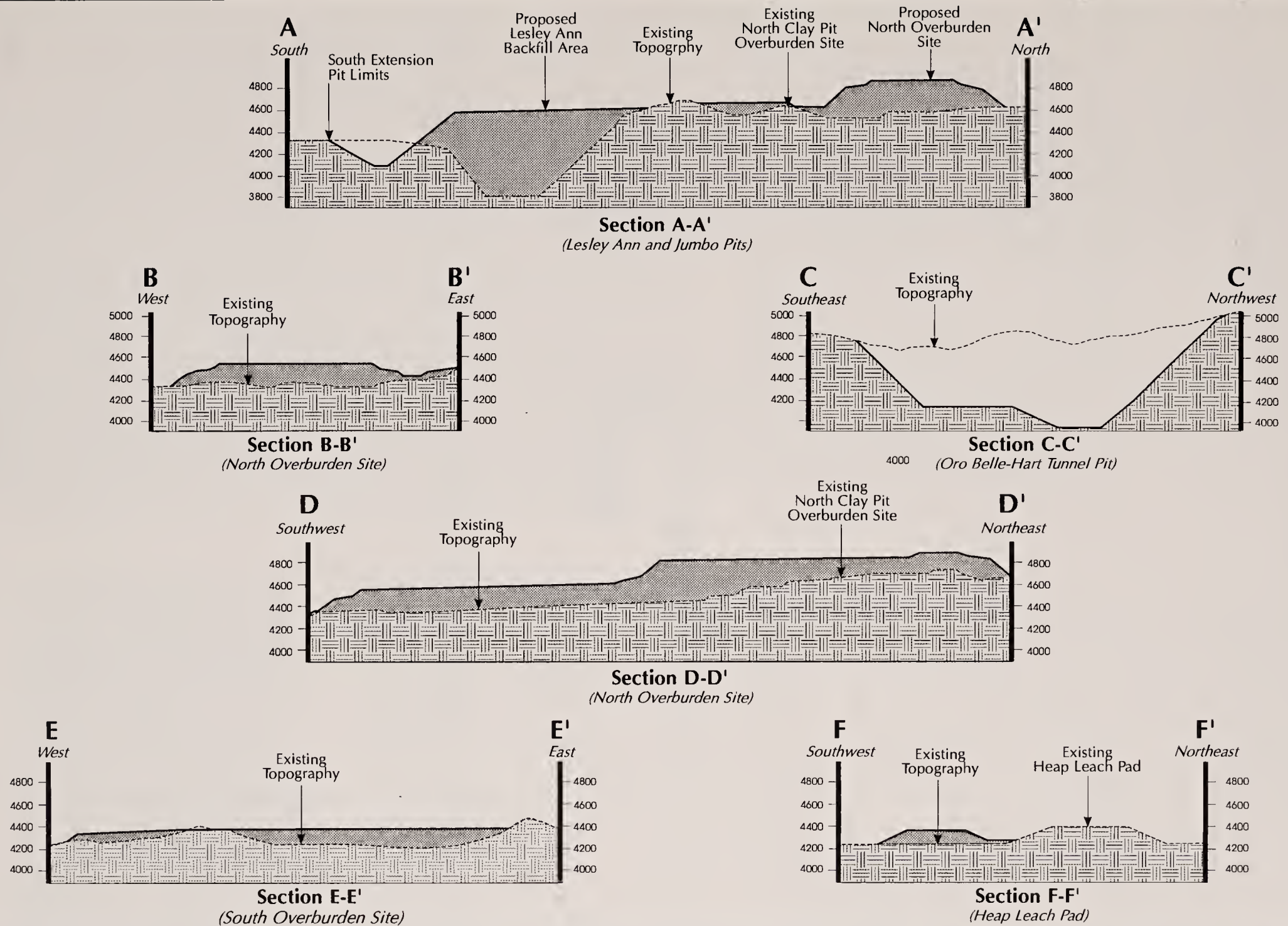
- Existing Topography
- Roads
- Original Mine Site Boundary

- Amended Mine Site Boundary
- Proposed Contours
- Major Facilities
- Cross Section Location  
( See Figure 2.0-10 for Cross Sections)

Note: This plan is conceptual only. Actual facilities would be determined by geology results during mining operations.

## Amended Mine Plan





**Note:**  
See Figure 2.0-9 for Cross Section locations

## Amended Mine Plan Cross Sections

CASTLE MOUNTAIN MINE  
San Bernardino County, California

0 1,500 3,000  
Horizontal Scale: 1"=1,500 Feet  
Vertical Scale: 1"=1,500 Feet



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

TABLE 2.0-3 PRODUCTION AND OPERATIONS LIFE SUMMARY		
Reserve Area		Period of Operation <sup>(1)</sup>
<b>Permitted Operations</b>		
Lesley Ann		1991 to 1996
Oro Belle		1996 to 1998
Jumbo		1996 to 1998
Low grade stockpiles		1998 to 2000
<b>Ore Overburden Permitted Operations Subtotal</b>		<b>30 million tons 60 million tons 90 million tons</b>
<b>Extended Operations</b>		
Oro Belle		1996 to 2009
Jumbo		1996 to 2003
Hart Tunnel		1997 to 2009
South Extension		2002 to 2006
Low grade stockpiles		2003 to 2009
Leach pad rinsing/facilities decommissioning		2010
<b>Ore Overburden Extended Operations Subtotal</b>		<b>41 million tons 161 million tons 202 million tons</b>
<b>TOTALS</b>	<b>ORE OVERBURDEN PRODUCTION</b>	<b>71 Million Tons 221 Million Tons 292 Million Tons</b>

NOTE:

- (1) Approximate time periods for mining and concurrent reclamation. Once processing of the low-grade stockpiles and decommissioning of facilities is completed (estimated to occur during 2010), a 10-year period would follow for final reclamation, and reclamation monitoring.

### *Underground Mining*

Underground mining methods are generally inapplicable to the low-grade disseminated Castle Mountains ore bodies. However, limited application of underground techniques is planned for a deposit known as the "Lucky John," located in a side wall of the Lesley Ann Pit. These techniques may be applied in limited locations of other pits as they are developed.

The Lucky John deposit is a very limited reserve of less than 200,000 tons. The reserve would be mined by an end slice method, consisting of drilling an access drift above and below the ore zone, then removing the material between these access points. The deposit would be mined in an approximate 6 to 12 month period. Equipment used for this purpose would be onsite only for this short-term underground use and would typically include:

Description	Quantity
5 Cubic Yard Load-Haul Dump	3
2 Cubic Yard Load-Haul Dump	1
Scissors Lift Truck	1
26 Ton Truck	3
16 Ton Truck	1

Other equipment already in use on the site (refer to Table 2.0-3), such as personnel carriers, dozers, and haul trucks, would also be used as needed.

Overall, the ore and overburden material generated from this entire effort would be less than the same materials from 4 days of ongoing surface mining, and would be an insignificant contribution to the heap leach pad size. Non-ore bearing rock would be placed directly into the adjacent Lesley Ann Pit as backfill.

### ***Overburden Areas and Placement***

Establishing an additional overburden area (the North Overburden Site) is integral to the development of the adjacent Jumbo, Oro Belle, and Hart Tunnel deposits. Overburden sites are designed to be located as close as possible to the mining areas to minimize haul distances, but cannot conflict with future mining of mineralized areas. Use of previously disturbed sites minimizes additional habitat disturbance. The North Overburden Site was selected based on these criteria. Photographs are shown in Figure 2.0-11. The site would cover a portion of the previous surface disturbances associated with the former town of Hart. The North Overburden Site would occupy an estimated area of 205 acres. The site would merge surfaces with the North Clay Pit Reclamation Area (50 acres) and South Clay Pit Reclamation Area (35 acres) where overburden has already been placed.

The overburden site would be constructed in a benched configuration at an overall slope angle of 2.0 horizontal: 1 vertical (2.0H:1V), as shown in Figure 2.0-10. Overburden material would be placed by end-dumping from the top of each bench as it is constructed. The dynamics of the end-dumping placement method results in interbench slopes that are several degrees less than the natural angle of repose, resulting in some inherent stability for these slopes. Because of the dynamic placement method, interbench slope angles are expected to be approximately 34 degrees (1.5H:1V) compared to an estimated natural frictional strength of broken rock of approximately 45 to 50 degrees.

No special management, either for the containment or placement of overburden, is projected, as testing and characterization indicates that the material is not net acid-forming and metal concentrations are low.

### **Mine Pit Backfilling**

Overburden disposal plans include sequential backfilling of the Lesley Ann and Jumbo Pits, and partial backfilling of the South Extension deposit, by selective placement of approximately 95 million tons of overburden as it is mined from the Jumbo, South Extension and Oro Belle-Hart Tunnel Pits.

Backfilling considerations were discussed extensively in the Previous EIS/EIR in response to the desire of some commentors to replace mined rock back into the mine pits. Backfilling was not planned due to several considerations, including:

- Broken rock has greater volume than solid rock (averaging 30 to 40 percent), mined rock will not entirely fit back into an open





Former Hart townsite and associated disturbances (note low vegetation density in foreground). View west from North Clay Pit Reclamation Area.



Hart mine road (top center) and former Hart townsite. Foreground area would be covered by overburden. View west from North Clay Pit Reclamation Area.

## Proposed North Overburden Site Photographs



pit. The environmental advantages to partial backfilling were, therefore, determined to be questionable.

- Additional known ore reserves would exist in the walls and floor of the Lesley Ann Pit that could be mined with potential increases in the price of gold. If backfilling were completed, the cost of recovering the ore in the future would become so high that it would become lost as a resource.
- Backfilling completed as an additional activity following the conclusion of mining in an open pit is a costly burden that essentially doubles the cost of loading and hauling. This could make an otherwise profitable mine uneconomic to develop and operate. In addition, it increases certain environmental impacts such as air emissions and fuel use.

Recognizing these constraints, the Previous EIS/EIR also explored what opportunities could exist for backfilling. It was determined that overburden from current mining could be placed in the formerly-mined clay pits. As this could be accomplished in conjunction with mining, the problem of increased costs would not occur. Clay resources were stockpiled to minimize the loss of this material. This opportunity provided for the reduction of visual contrasts, especially at the South Clay Pit and Big Chief Hill.

Due to the actual sequence experienced in ongoing mining, limited backfilling of the Lesley Ann Pit has been incorporated into current operations (refer to Figure 2.0-6).

For the Proposed Action, the potential for additional backfilling opportunities were

explored. It was determined that substantial backfilling could be incorporated, resulting in complete backfilling of the Lesley Ann Pit to the approximate contour of the drainage floor prior to mining. This would occur if mining proceeds through the end of Phase 2. This opportunity exists due to three primary considerations not available at the time of the Previous EIS/EIR:

- An in-pit drilling program was undertaken in the Lesley Ann Pit to evaluate the reserves. Fewer ore tons were encountered than previously predicted by modeling from exploration drilling. The potential for future additional mining was therefore reduced.
- The angle of Lesley Ann Pit walls was increased during development, such that additional ore that would have otherwise remained in the pit walls was able to be mined. This reduces the reserves that would be lost due to backfilling.
- Sequential backfilling in conjunction with extended operations can result in better optimization of the planned future mining, by reducing the cost of hauling, minimizing the sizes of overburden areas to be permitted and reclaimed. Reduced costs means ore could be cost-effectively mined now in the additional pits, rather than waiting for future increases in prices to make additional mining of the Lesley Ann Pit wall economic.

The planned activities would backfill approximately 140 acres occupied by the Lesley Ann and Jumbo Pits, and part of the South Extension, to approximate the original surface elevations in this area. An additional 26 acres of the South Extension would be



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

partially backfilled, creating a south-facing scree slope in this pit (refer to Figures 2.0-9 and 2.0-10).

The sequential backfilling would be scheduled so as to avoid interfering with ongoing mining operations in the various pits. Thus, approximately 22 million tons of overburden from the Jumbo and Oro Belle-Hart Tunnel Pits would be placed in the Lesley Ann Pit, pending completion of mining activities in the South Extension. Once the South Extension mining has been completed, a further 41 million tons of overburden from the Oro Belle-Hart Tunnel Pit would be placed to complete backfilling of the Lesley Ann Pit, and partially backfill the South Extension.

The commencement of mining in the South Extension would overlap with the completion of mining in the Jumbo Pit. As soon as the Jumbo Pit is completed, sequential backfilling of this pit with overburden produced from ongoing mining of the South Extension and Oro Belle-Hart Tunnel Pit would commence. Approximately 32 million tons of overburden would be backfilled to the Jumbo Pit.

No haul roads would be needed to connect the mine areas to the new North Overburden Site, as the site is contiguous to the Jumbo and Oro Belle-Hart Tunnel Pits, as shown in Figure 2.0-9. Temporary haul roads would be incorporated into the mine pits or overburden storage sites as these facilities are expanded. Construction of additional site access roads would not be required.

### ***Heap Leach Pad and Storage Basins***

Three separate heap leach pads covering 330 acres are currently permitted. To date, only one pad has been constructed, as shown in Figure 2.0-3. This is due, in part, to the

higher leach pad height (currently 120 feet) than was originally anticipated. A photograph of this facility is shown in Figure 2.0-12. Additional engineering has determined that these could be combined into a single pad, maximizing operational efficiency, also avoiding the disturbances associated with the construction of three separate facilities. The total pad area would be increased to accommodate the additional ore to be processed. The reconfigured heap leach pad would cover approximately 420 acres. The maximum height would be increased from the existing height of 120 feet by 30 feet to 150 feet. Photographs of the proposed heap leach pad area are shown in Figure 2.0-13. This redesign of the heap leaching area would eliminate the need for the pad located directly west of the South Clay Pit Reclamation Area and the northeast portion of the westerly heap leach pad. Final engineering design to accommodate site-specific conditions could result in some modification to the shape and orientation shown, as a consequence of review and approval by the Regional Water Quality Control Board (RWQCB).

The additional ore to be processed and related area of heap leach pad would necessitate increased solution storage requirements. Although the actual rate of heap leaching would remain similar to the existing operation, an increased pad area would capture more stormwater from precipitation events. In general, the larger the heap leach pad area, the greater the volume of water that must be retained within the solution handling system during a precipitation event. Therefore, as a result of reconfiguration and enlargement of the leach pad area, stormwater storage capacity would be needed. Up to four additional stormwater basins (approximately 2 acres each), with a total capacity of



Photograph: Lilburn Corporation Date: 11/96



Heap leach pad and processed ore. View northwest.

Photograph: Lilburn Corporation Date: 11/96



Solution storage tanks and stormwater basin. View southeast.

## Heap Leach Pad and Facilities Photographs



Photograph: Lilburn Corporation Date: 11/96



Area of proposed heap leach pad, located northwest of existing heap leach. View northwest.

Photograph: Lilburn Corporation Date: 11/96



Existing heap leach pad would be extended northwesterly (top left area) as part of proposed action. View northwest.

## Proposed Heap Leach Pad Area Photographs



approximately 20 million gallons, may be needed over the life of the mine. The additional basins would be located adjacent to the existing basins. As a water conservation measure, water retained in the storage basins from a precipitation event is added to the leaching process in lieu of make-up water from the well field.

### ***Growth Media Storage and Nursery***

In general, it is planned that recovered growth media be immediately placed on surfaces ready for reclamation. This is best for seed viability, eliminates surface disturbance for growth media storage, and minimizes double handling. A net 10 acre decrease in area for storage of growth media and salvaged vegetation for revegetation of the completed facilities would result, as growth media storage and nursery areas for salvaged vegetation could utilize previously disturbed sites. Photographs of the salvaged plant nursery and greenhouse are shown in Figures 2.0-14 and 2.0-15.

## **2.2.4 Reclamation Plan Modifications**

The Applicant has submitted proposed revisions to the Reclamation Plan to accommodate the mine plan amendments. The revisions incorporate the new areas of mine pits, overburden and heap leach pads as additional areas to be reclaimed. No changes to the previous plans for surface treatment, revegetation, or other reclamation tasks and procedures would occur. Reclamation phasing is also modified to correspond with the stages of mining.

Other than increases in areas for the expanded mine pits, overburden storage sites, and heap leach pads, the only new consideration for

reclamation is the 140 acres of the Jumbo and Lesley Ann mine pits would be *backfilled* with overburden in the later stages of project mining, and reclaimed. Surface reclamation of this area would therefore be completed in a fashion similar to other overburden areas, including recontouring, growth media placement, and revegetation.

Reclamation is further discussed in Section 2.2.7.

## **2.2.5 Modifications to Conditions and Stipulations**

As part of the application, Viceroy is requesting modifications to certain County Conditions of Approval and/or BLM Stipulations. These modifications are requested to eliminate or reduce measures determined unnecessary for environmental mitigation, and to expand and clarify CUP and ROD conditions to reflect actual revegetation work.

### **Modification of Rock Pit High Wall Staining Requirement**

Rock staining procedures were required in the Previous EIS/EIR to reduce the visual contrast between the mine pit walls and the undisturbed slopes. The purpose of this requirement was to reduce the visibility of the pit high walls from offsite areas because drilling samples indicated the rock would be very light-colored (due to an anticipated high clay content), which would heighten contrast with surrounding rock. Specifically addressed in the Previous EIS/EIR were views from Lanfair Road west of the site; from the East Mojave National Preserve north of the site, and from the East Mojave Heritage Trail south of the site.



Photograph: Lilburn Corporation Date: 11/96



Barrel cactus salvage nursery on South Overburden Site.

Photograph: Lilburn Corporation Date: 11/96



Salvaged plants in nursery. View west.

## Salvaged Plant Nursery Photographs





Native plant seed warehouse and greenhouse. Seed of over 42 species of native plants has been collected.



Greenhouse propagation. Over 52 species are being grown from seed and cuttings.

## Greenhouse Photographs



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Applications of rock stain were tested at selected locations. This was done at rock cuts along drill access roads, the top of Big Chief Hill (the eastern high wall of the South Clay Pit) and on selected areas within the Lesley Ann Pit. These test applications demonstrated that the procedure could be effective in reducing contrasts where light-colored rock was exposed by mining. However, because the Lesley Ann Pit high wall has been much darker in color than anticipated, the contrasts originally expected have not occurred, as shown in Figure 2.0-16. No large scale staining of the pit high walls has, therefore, been completed.

Based on this experience, Viceroy has proposed in its application to eliminate the high wall staining requirement. Subsequent discussions with BLM and County staff at an onsite examination concluded that, although the staining requirement may not have been necessary for the Lesley Ann Pit high wall, the potential color contrasts of additional high wall areas that would be developed as part of the Proposed Action are not certain. The staining requirement should, therefore, not be eliminated, but revised to provide flexibility for use on an as-needed basis. The following modification is therefore proposed:

***BLM Stipulation No. 76, and County Condition No. 93:*** Rock staining solutions shall be used on the upper mine pit walls where necessary to reduce the contrast of light-colored rock exposed by mining activities. This requirement shall exclude backfilled areas and the Lesley Ann Pit high wall. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes.

### **Elimination of *Penstemon stephensii* Condition and Stipulation**

The Previous EIS/EIR identified the potential occurrence of *Penstemon stephensii*, a former federal Category 2 species and a California Native Plant Society Category 1b species on the mine site. This resulted in the establishment of County Condition of Approval No. 54 and BLM Stipulation No. 29 which established guidelines for the occurrence of *Penstemon stephensii*, including protocol for flagging and fencing, monitoring of populations, and transplanting and/or reseedling. The adopted condition/stipulation is as follows:

***Condition 54/Stipulation 29:*** Concerning the on-site location of the Stephen's Beardtongue (*Penstemon stephensii*) population the following measures shall be required: [FEIS Section 3.2.1]

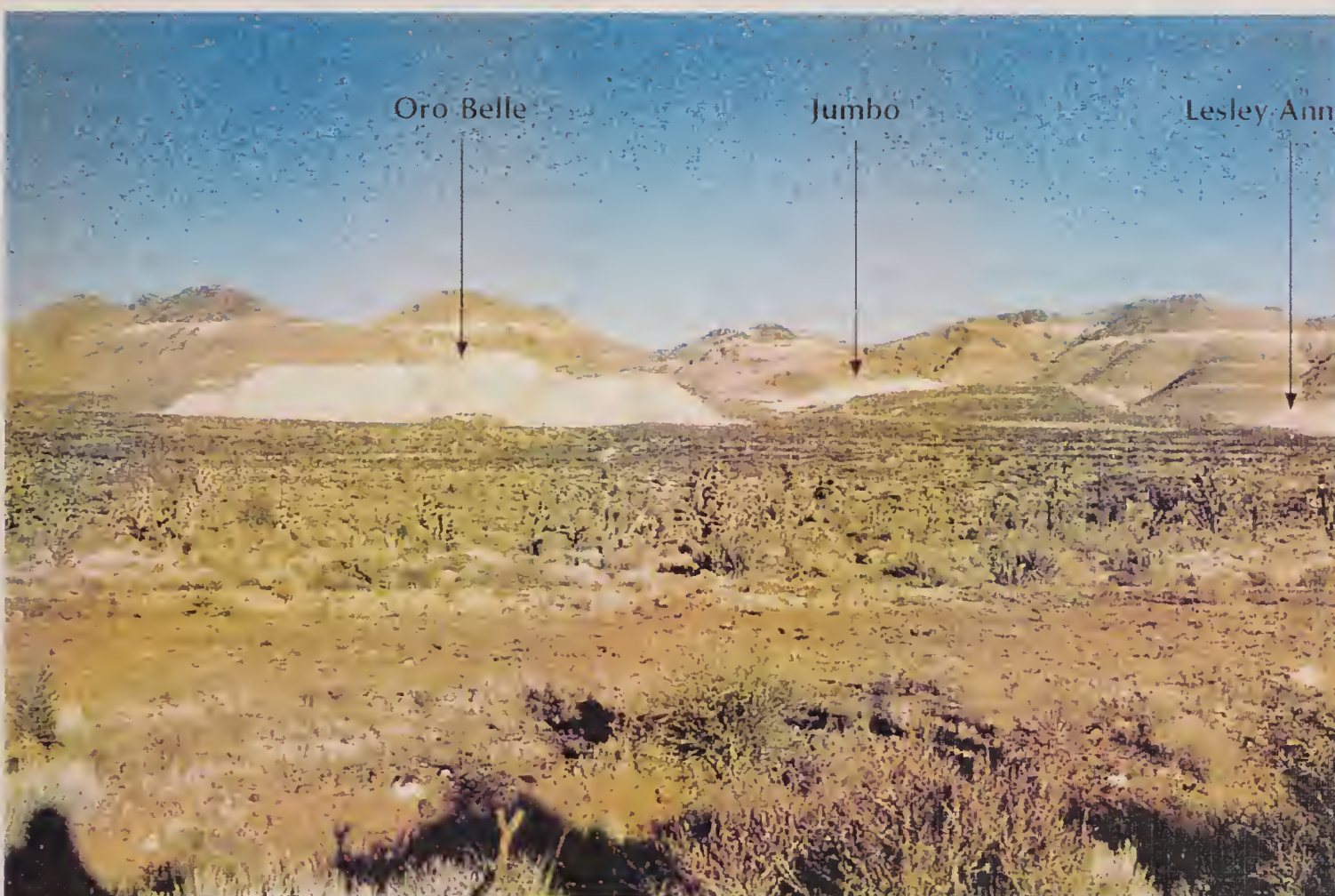
- a. Flag, fence, sign, or otherwise delineate the on-site population, or other discovered populations to ensure avoidance during project construction and operations.
- b. Monitor the known population and other individuals/populations that are found during project operations.
- c. If individuals do not appear elsewhere on-site, collect and broadcast seed from the known population to other on-site areas, or transplant individuals to another location, before reclaiming mine exploration drill.

Subsequent surveys have revealed that *Penstemon stephensii* was erroneously assumed to occur and does not exist on the mine site or surrounding areas. Instead, a subspecies of *Penstemon bicolor* does occur on the mine site. This subspecies is listed as threatened in Nevada, but is not listed in California. Plant surveys done in 1994 and 1996 have revealed the presence of *Penstemon bicolor* as far south as Piute Spring and as far north as the petroglyphs northwest of the mine site.





Lesley Ann pit high wall (left center) as viewed from Lanfair Valley near mine site. Note former South Clay pit at Big Chief Hill (center) has been covered with low contrast overburden as part of reclamation program. View east.



Mine pit highwalls as viewed from Lanfair Valley. From left to right, Oro Belle (at top of North Clay Pit overburden), Jumbo Pit right center, and Lesley Ann Pit (far right). View east.

## Pit High Wall Photographs

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-16



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The Jepson Manual lists the Castle Mountains as the sole location of *Penstemon bicolor* in California. The collection for Jepson was made by Dr. Alan Ramsperg during a plant survey at the mine site. Specimens are now being found elsewhere in the region, extending the known range of this species.

Based on this information, the applicant requests that the aforementioned County Condition of Approval/BLM Stipulation be omitted to reflect the actual conditions, and absence of *Penstemon stephensii*.

### Expanded Specificity to Vegetation Salvage Requirements

Revegetation requirements originally stipulated that a multi-faceted revegetation research program be implemented. The program was to include the establishment of quantifiable goals for density and diversity of perennial plant species and identification of dominant species, such as barrel cactus and Joshua trees, to be used in revegetation. The adopted condition is as follows:

**Condition 48(c):** Revegetation success shall be determined by measuring the density and diversity of perennial species. The 10-year goal for density, using only perennial species, will be 21 percent as compared to undisturbed control sites. Using a sigmoidal curve, the 5-year goal for density will be 6 percent of the control. The 10-year goal for diversity will be 15 percent, expressed as a similarity index of the control. The 5-year goal for diversity, based on a sigmoidal curve, will be 4 percent, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.

**Condition 48(e):** Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas

to provide a continuous seed source. The goal will be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees 3 to 10 feet in height, unbranched or with few branches.

A Revegetation Review Committee was formed as part of initial mine approval. The purpose of this committee was to review the mine's annual revegetation reports, propose actions that might increase the success of the revegetation, and advise BLM and the County as to suggested changes to the revegetation program. The Revegetation Review Committee recommends the text of Condition 48(c) be revised to the following (deleted text is in strike-out, added text is underlined):

**Condition 48(c):** "Revegetation success shall be determined by measuring the density and diversity of perennial species. "Density" here means the number of live perennial individuals per unit area; "diversity" here means the number of perennial species (with live individuals) per unit area. The 10-year goal for density, using only perennial species, will be 21 percent as compared to undisturbed control sites. "Control sites" are defined at the end of this subparagraph. Using a sigmoidal curve, the 5-year goal for density will be 6 percent of the control. The 10-year goal for diversity will be 15 percent using only perennial species, expressed as a similarity index of the control. The 5-year goal for diversity, based on a sigmoidal curve, will be 4 percent expressed as a similarity index of the control. ~~The diversity and density measurements will be based on randomly distributed plots located within areas representative of the reclaimed lands. The~~ standard control sites against which any revegetation area is assessed for density and diversity shall be a subset of the approximately 300 plots which were established immediately prior to the onset of mining operations. The subset shall be those plots most closely similar in topographic position to the revegetated area, and the vegetation data originally collected on that subset shall ordinarily be the data set used as the standard. Any two members of the Revegetation Review Committee may, however, request that the standard be a data set from the current year instead of from the past. In such a case it is likely that only some fraction of the original 300 plots will have remained undisturbed and be relocatable in order to take the current year's plant cover data. That is, the subset



available for resurvey will be smaller than the original. This remaining number of plots is termed the "sub-subset". The standard sub-subset shall be those plots which have remained undisturbed, have been permanently marked so that they are relocatable, and whose topographic position is most closely similar to that of the revegetation plot."

In salvaging dominant species for transplanting, Viceroy was required by Condition of Approval 48(e) to collect 25 percent of barrel cactus and 25 percent of Joshua trees within a certain size class. Viceroy has consistently collected well in excess of 25 percent of these species. In recognition of their value as "nurse" plants, Viceroy has also extensively collected blue yuccas and Mojave yuccas. The Committee is recommending that these two species be added to the barrel cactus and Joshua tree as species that are to be salvaged pursuant to Condition 48(e). The proposed changes are as follows:

**Condition 48(e):** "Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, ~~such as Joshua trees and barrel cactus~~, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent ~~of all Joshua trees 3 to 10 feet in height, unbranched or with few branches~~ of the following species with the size classification shown:

Joshua tree — 3 to 10 feet in height, unbranched or with few branches;

Mojave yucca — well developed, single-stemmed plants that have not developed a vertical trunk;

Blue yucca — well developed, single-stemmed plants that have not developed a vertical trunk;

Barrel cactus — plants no smaller than 8 inches in diameter and no taller than 14 inches

For the purpose of these Conditions of Approval:

(1) transplant of plants salvaged during site clearing operations shall mean the placement of such plants

into their final revegetation sites on reclaimed areas, and

(2) bond release shall be determined solely by the density and diversity goals specified in Condition 48(c), notwithstanding failure to achieve the 25 percent transplanting goal specified in this subparagraph."

The expanded Condition 48 will therefore include definitions of the terms "density," "diversity" and "control sites" and will expand the number of species of plants to be salvaged for transplant, from Joshua trees and barrel cactus, to also include Mojave yucca and blue yucca.

## Frequency of Piute Spring Monitoring

Piute Spring is a perennial water source located approximately 16 miles southeast of the area where the Castle Mountain Mine water wells are located. The water supports riparian vegetation and associated habitat. The Previous EIS/EIR included an extensive investigation and analysis of the Lanfair Valley aquifer and potential effects due to extraction of water from wells in Lanfair Valley for the Castle Mountain Mine. Although the evaluation concluded that the project's effects would be localized to the well field area in northern Lanfair Valley, a requirement was adopted to monitor Piute Spring to establish its flow characteristics. As one of the Conditions of Approval for the existing operation, a multi-year program of data collection was required.

Surface water flow is measured monthly; water quality is tested below the Piute Spring outlet on a quarterly basis. Piute Spring monitoring was completed as baseline data for the Previous EIS/EIR, and has been ongoing since mid-1987, prior to mine development.



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Water extraction from the mine well field began at the commencement of construction in April 1991. The well field monitoring program included drilling two monitoring wells between the mine's well field and Piute Spring. Monthly readings are taken to measure groundwater levels in these wells. Monitoring of the aquifer drawdown at the mine well field demonstrates that the evaluations in the Previous EIS/EIR were correct in their prediction that drawdown would be localized to northern Lanfair Valley.

Results of monitoring at the outlet at Piute Spring show that flow rates have typically ranged from 25 to 50 gallons per minute (gpm). There have been no detectable changes to the magnitude of stream flows or water quality since monitoring began in 1987. No drawdown has occurred at the monitoring wells (W-37 and W-38) located between the well field and Piute Spring. Monitoring well locations are shown in Figure 2.0-17.

Viceroy is committed to continued data collection at Piute Spring for continuity and agency management purposes. The original conditions and stipulations (Condition 40b and Stipulation 13b) provided for monthly monitoring of Piute Spring through the third year of mine operation, with a subsequent schedule to be agreed-upon. As the flow conditions at Piute Spring have been established, Viceroy proposes that the frequency of monitoring at Piute Spring be reduced from monthly to twice-yearly. Monitoring and water quality sampling would occur approximately at the end of the first and third calendar quarters. Monitoring results would be available to both the BLM and the NPS.

Groundwater monitoring of project effects to the well field area and at the intermediate monitoring wells would continue to be recorded on a monthly basis.

### 2.2.6 Integration with Existing Facilities and Operations

The proposed mine and reclamation plan amendments/modifications would operate as an extension of existing mine operations. As an extension of the existing mine, the expanded facilities would be developed in conjunction with the existing operation. All utilities infrastructure (water, power, communications), ore processing, conveyance, gold recovery, administration, mine shop, and reclamation facilities would continue to operate as they do today. The same methods would be used, and maximum rates of processing are not proposed to change. The conventional mining and heap leach process used at the mine is shown in Figure 2.0-18.

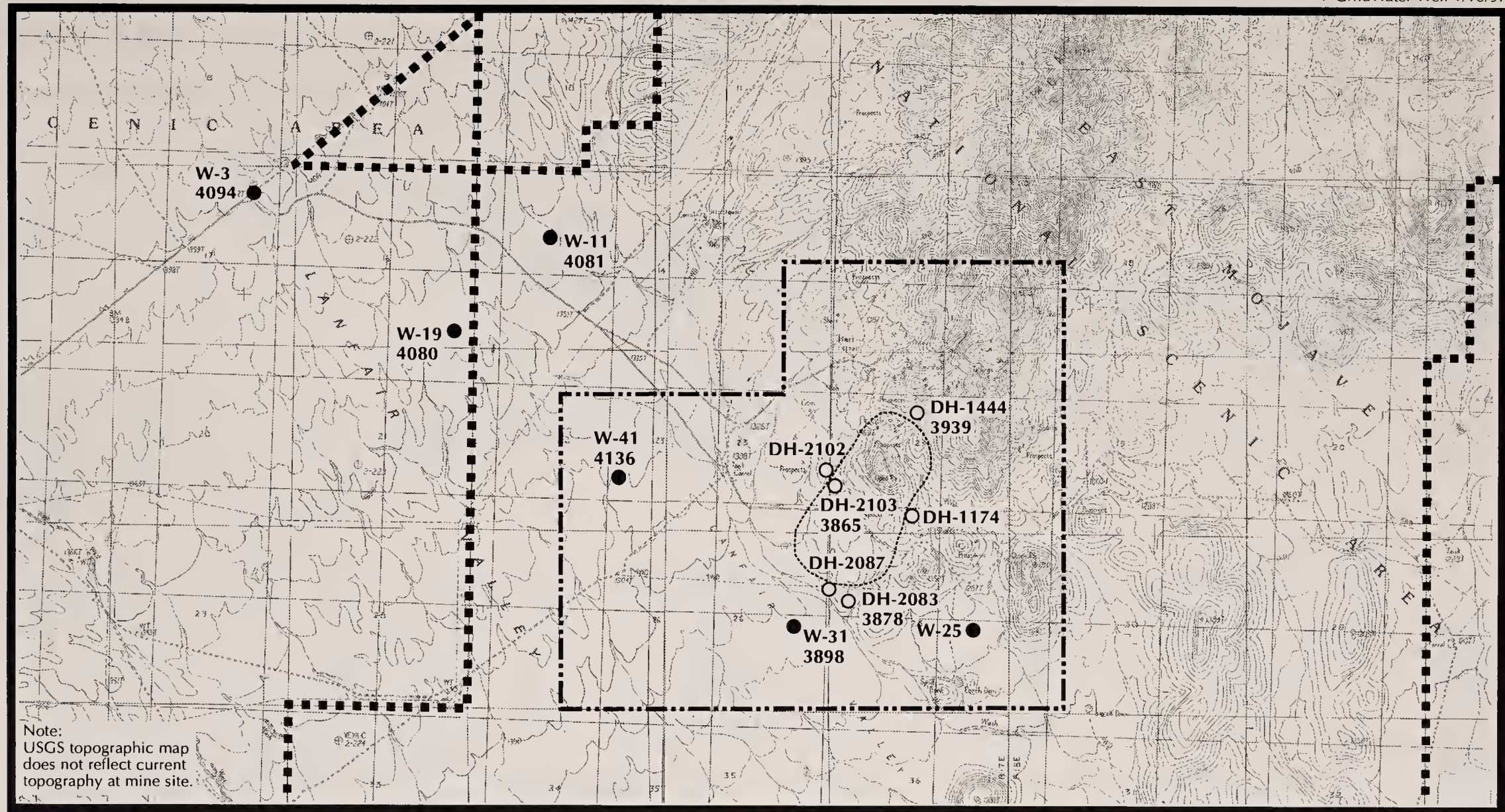
The following sections address the approved and operating facilities that would continue to be used. These mining and reclamation operations are currently permitted to continue through the year 2010. Approval of the proposed Mine Plan Amendments would extend their use to the year 2020.

### Mining

#### *Mining and Processing Rates*

Mining and processing rates at the Castle Mountain Mine have fluctuated widely since operations were initiated in 1990; such fluctuations are normal to start-up operations due to variations in overburden stripping ratios, and inconsistent access to economic ore. As an operational goal, it is desirable to equalize economically unproductive

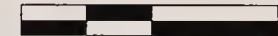




### Legend

- |                            |                           |  |
|----------------------------|---------------------------|--|
| ● Monitoring Well          | --- Mine Site Boundary    | ..... Approximate Boundary of Mine Pits Area |
| ○ Exploration Drill Well   | ■ Viceroy Claims Boundary |  |
| 4136 Groundwater Elevation |                           |  |

0 5,000



Scale: 1"=5,000 Feet

Map Prepared By:  
Lilburn Corp., 1996

Data Source:

Terracon, 1996

All Locations are Approximate

Base Map:

USGS, 1984



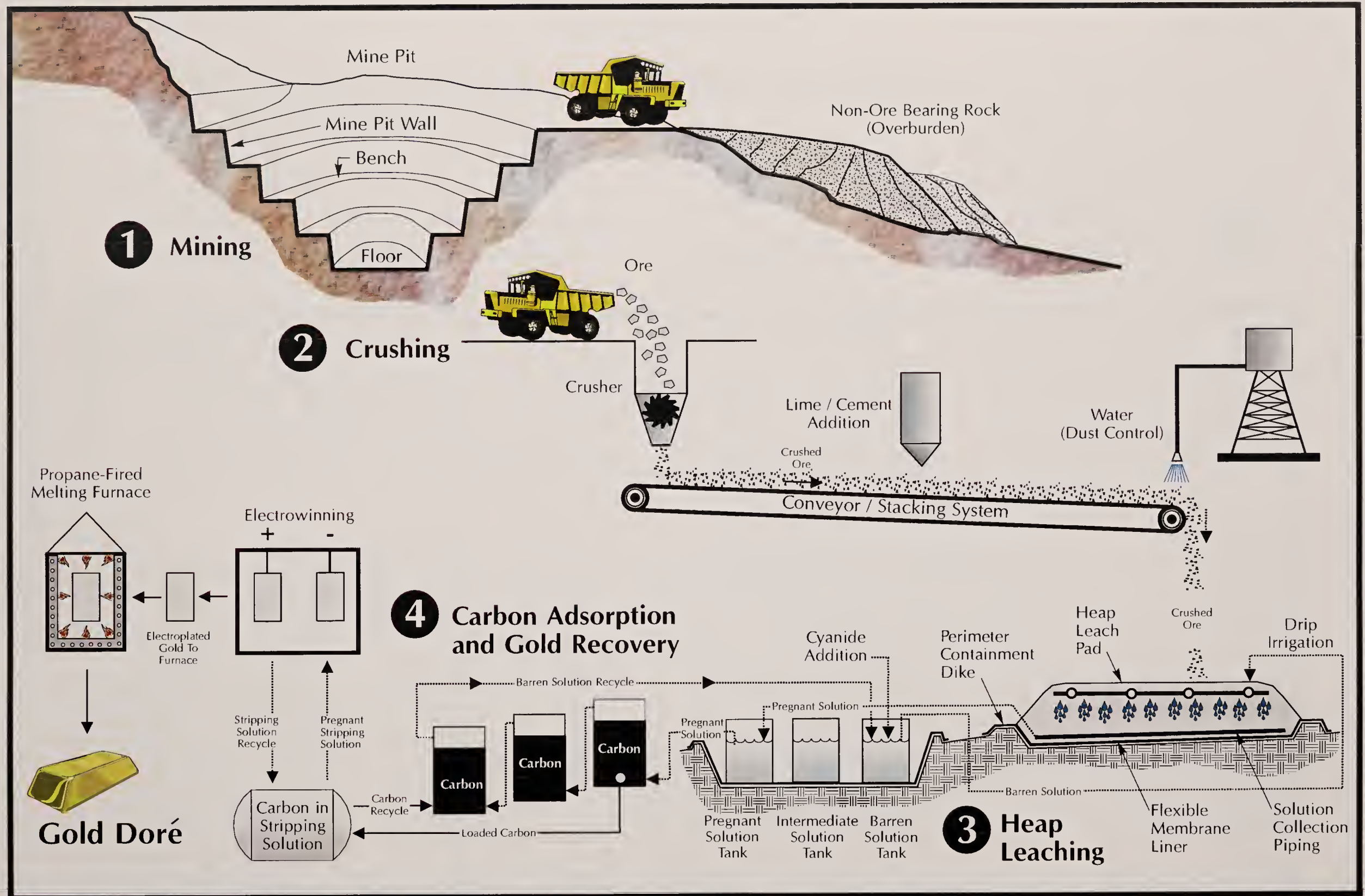
## Groundwater Monitoring Well Locations

**LILBURN**  
CORPORATION

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Figure 2.0-17



**Legend**

←..... Solution Flow Paths

← Materials Flow Paths

## Schematic Mine Operation Flow Diagram

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-18

overburden mining with economic ore mining, to maintain consistent crushing and processing activities and cash flow.

Overburden production has varied between 6.8 million tons per year and 17.1 million tons per year. Under the Proposed Action, the average annual overburden production would be more regular at approximately 15.5 million tons per year.

Ore processing has ranged from 2.8 million tons per year to 3 million tons per year, with a maximum of 4.5 million tons per year. Under the Proposed Action, ore is expected to continue to be processed within these parameters, at an average of approximately 4.1 million tons per year.

As a result, efficiency in operation of a mature mine will more-or-less standardize its overburden and ore production, with rates maintained below previous maximum and permitted values, while more efficiently mining an increased amount of rock in the extended operation as compared to the permitted operation (refer to Table 2.0-2).

### ***Mining Operations and Equipment***

The Castle Mountain Mine uses conventional open pit mining methods as illustrated in Figure 2.0-19. Photographs of mine pit development are shown in Figure 2.0-20. These methods involve:

- Drilling and blasting to loosen and fragment overburden and ore.
- Excavating and loading overburden and ore into haul trucks for removal from the mine pit.

- Transporting overburden and ore to the overburden site, protore stockpiles or crusher.

Drilling and blasting uses either rotary or percussion blasthole drills and for explosives uses either an ammonium nitrate/fuel oil (ANFO) mixture, water-resistant slurry, or dynamite and boosters. Explosives and detonators are stored in an approved magazine. Blasting is scheduled during daylight hours. Overburden and ore are excavated and loaded by front-end loaders into 85- to 120-ton haul trucks for transport to the overburden site, crusher or low grade ore stockpiles.

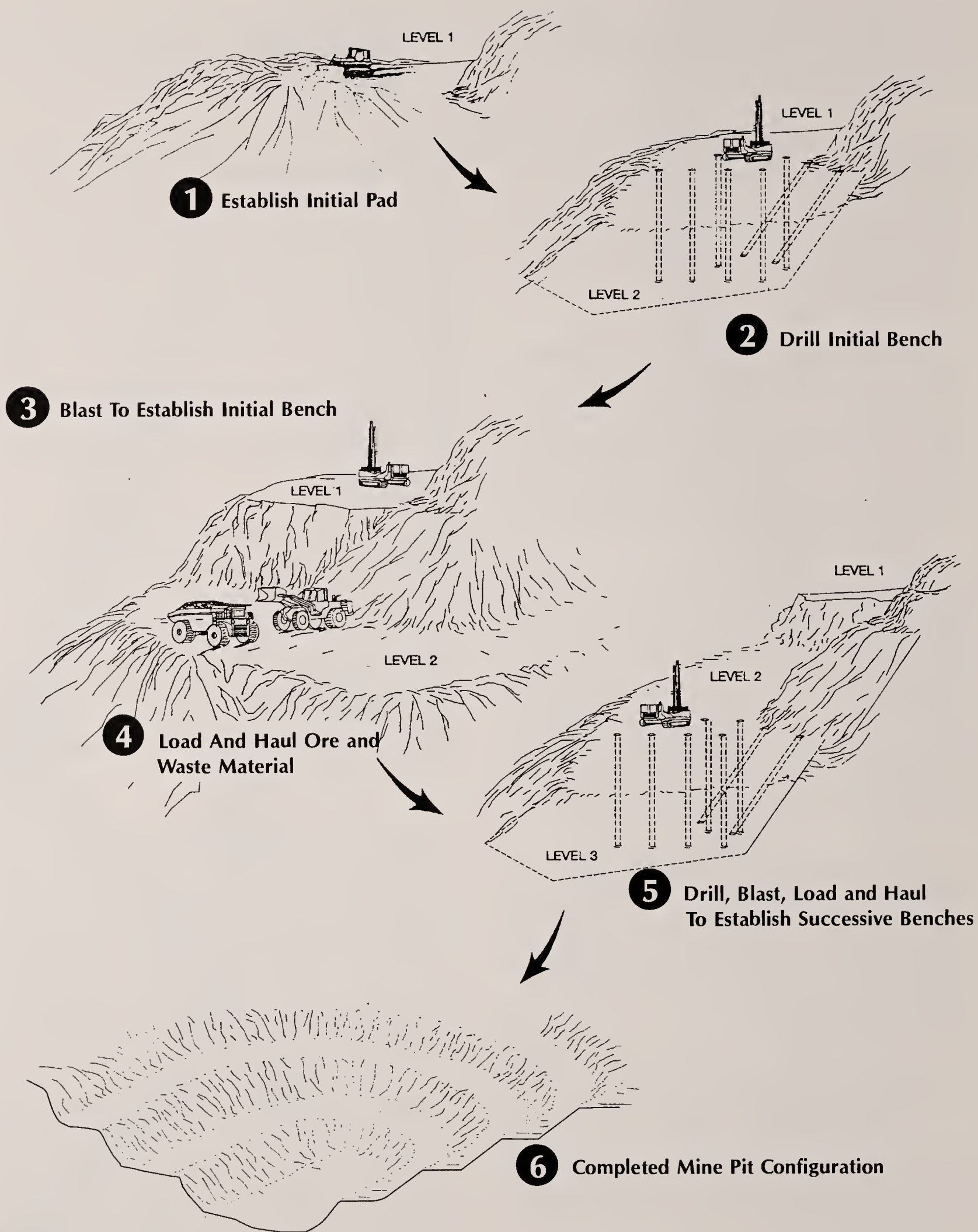
The primary types and quantities of equipment used for mining operations are shown in Table 2.0-4. Actual numbers of equipment in use varies and is typically less than shown in the table depending on changing overburden removal quantities and haul distance changes as mining progresses. Types and models of equipment also vary as newer models replace old equipment over time.

The same types of equipment as now used would continue to be used for the extended mine life. The methods of mining and transport of ore and overburden would remain the same. Other than normal fluctuations such as now occur, no change to mining procedures, hours of operation, personnel or equipment is proposed.

### ***Mine Pit Locations and Configuration***

Mining in the Lesley Ann Pit was completed in February 1996. Mining of the Oro Belle and Jumbo deposits commenced in December 1995 and January 1996, respectively. Mining areas are proposed to expand southerly and northeasterly to develop the new reserves.





Source: Modified after Terra Matrix, 1995.

## Mine Pit Development Schematic Diagram

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-19





Phases of initial pit development are evidenced in this photograph of the Jumbo and Oro Belle pits. Exploration drill roads are shown at left. Drilling and blasting (broken rock) are shown at right. Bench development is evident at top center.



Mine pit development. Oro Belle Pit shown (center). View northeast.

## Mine Development Photographs

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-20



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

TABLE 2.0-4 TYPICAL MINING EQUIPMENT		
Number of Units	Description	Nominal Size
4	Blasthole drills	2.5 to 6.75 inches
4	Loading units	13 cubic yards
15	Haul trucks	85 to 120 ton
3	Road graders	16-G class
3	Bulldozers	D9 class
1	Wheeled dozer	834 class
3	Water trucks	4 to 10,000 gallons
1	ANFO truck	10 ton
2	Lube and oil trucks	35 ton
13	Pickups	½ ton

However, the overall location (in a valley at the southern end of the Castle Mountains) would remain the same. Pits would be enlarged vertically and horizontally.

The lowest pit floor elevation (prior to backfilling) would be the South Extension, at the southern limits of the mining area (3,800 feet above mean sea level (MSL)). The highest pit floor elevation would be the Hart Tunnel, at 4,120 feet above MSL.

As previously conceived and extended with the mine plan modifications, the Castle Mountain Mine consists of a number of discrete ore deposits. In some cases, the projected high walls of these deposits overlap. Where this occurs, the individual pits coalesce into a single excavation, dividing at depth into discrete pit bottoms separated by low internal saddles.

### Overburden Placement

Most of the overburden is currently placed in the South Overburden Site, as shown in Figure 2.0-21. Some limited amount is used for haul and service roads, storm drainage berms, or other areas where fill is needed. Ongoing mining in the Jumbo and Oro Belle-Hart Tunnel deposits would primarily use the North Overburden Site, with sequential backfill into the Lesley Ann Pit, and potentially could be used for backfill into the Jumbo and South Extension Pits.

Methods of overburden placement and the configuration of slopes would be the same as currently practiced.

Limited amounts of low grade ore are produced during mining. These are selectively placed on overburden sites for potential future gold recovery. Low grade ore is presently stored on the South Overburden



South Overburden Site. View east.

## South Overburden Site Photograph

CASTLE MOUNTAIN MINE  
San Bernardino County, California



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Site near the crusher and the South Clay Pit relocation area. Continued mining may result in additional storage of such ore for future recovery, dependent upon fluctuating gold prices.

### **Processing**

Ore from the expanded mining areas would be processed in the same manner as the existing mine, using the existing process equipment. Ore is crushed and screened to reach the desired size, agglomerated to bind the small particles, and sent to the heap leach pad on movable conveyors. Heap leaching, using a dilute sodium cyanide solution, is accomplished on a flexible membrane liner system, and the solution is collected and stored in steel tanks. Gold recovery is completed at an enclosed facility using the carbon adsorption process. Each step in this process was identified in detail and analyzed in the Previous EIS/EIR. In November 1992, agency approvals were given to install a grinding facility to process the higher grade portion of the ore, to achieve higher recoveries (the comminution circuit). This facility commenced operation in mid-1993. The only processing changes that would occur with the proposed mine plan amendments is expanding the heap leach pad area. The processing steps that would continue to be used for the extended mine life are identified in the following sections.

### ***Crushing and Conveying***

The crushing and conveying circuit consists of a primary, secondary and two tertiary crushers, vibrating screens, a crushed ore stockpile, a bypass surge stockpile, and a series of conveyors. The proposed expansion would crush and convey ore in the same manner as currently occurs, and at the same production rates. It is anticipated that the

overland conveyor and associated roadways would remain in their present locations. No additional site disturbance for the crushing and conveying system would be required. These facilities are located at the southwest limit of the South Overburden Site. Ore is crushed, as shown in Figure 2.0-22, stockpiled, agglomerated as necessary, and conveyed to the heap leach pads in a staged process. The facilities are authorized to process up to 4.5 million tons of ore annually for heap leaching.

A primary crushed ore stockpile is located adjacent to the primary crusher and receives ore from the crusher via conveyor (Figure 2.0-22). This stockpile has a total capacity of approximately 20,000 tons. The ore in this stockpile is removed by conveyor feeders beneath the stockpile, and is fed via conveyor to the fine crushing plant.

Agglomeration is used to improve leaching efficiency by reducing the number of fine-grained particles in the ore. Agglomeration is the process of using lime or cement and water or process solution to bind fine particles to larger pieces of rock.

A series of conveyors is used to transport the ore through the various crushing stages and to the heap leach pads. Portable conveyors and a radial stacker are used for placing crushed ore on the heap leach pads. The system has approximately 3,500 feet of overland conveyor and a capacity of approximately 700 tons per hour.

The Previous EIS/EIR also analyzed the potential use of haul trucks to transport crushed ore to the heap leach pads. This would occur infrequently, during times when the conveyor is not operating, due to the need





Crushing and conveying facilities. From left to right: primary crusher, conveyor and surge pile, conveyor to baghouse and secondary crusher. View southeast.



Overland conveyor from secondary crusher transports ore 3,500 feet to heap leach pad.

## Facilities Photographs



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

for maintenance or relocation. To date, such transport has not been required.

The comminution circuit grinding facility is located at the end of the overland conveyor system adjacent to the heap leach pad. This facility processes the higher grade portions of the ore. This ore is ground in cyanide solution and partially leached. The slurry is then thickened and filtered, to separate gold-bearing solution from the leached ore residue. The gold-bearing solution flows by gravity to the gold recovery plant. The filtered residue is agglomerated with the low-grade portion of the ore and stacked on the heap leach pad for additional leaching.

### *Heap Leach System*

The primary elements of the existing heap leach system are the heap leach pads, solution storage tanks, and a piping system that distributes and circulates the solution. The system is shown in Figure 2.0-18; existing facilities are shown in Figure 2.0-3.

Based on current estimates of a total maximum reserve of 71 million tons of ore, the leach pad is expected to cover an area of approximately 420 acres and reach a maximum height of approximately 150 feet above ground level. Leach pads are constructed in segments, according to the rate of ore processing. Leach pads are designed and constructed concurrent with mining and crushing operations by grading and compacting soil over which a flexible membrane liner is placed, designed to satisfy requirements of the RWQCB. Liner configuration is shown in Figure 2.0-23.

Solution used on the heap leach pads is drained by a piping system that discharges into solution storage tanks.

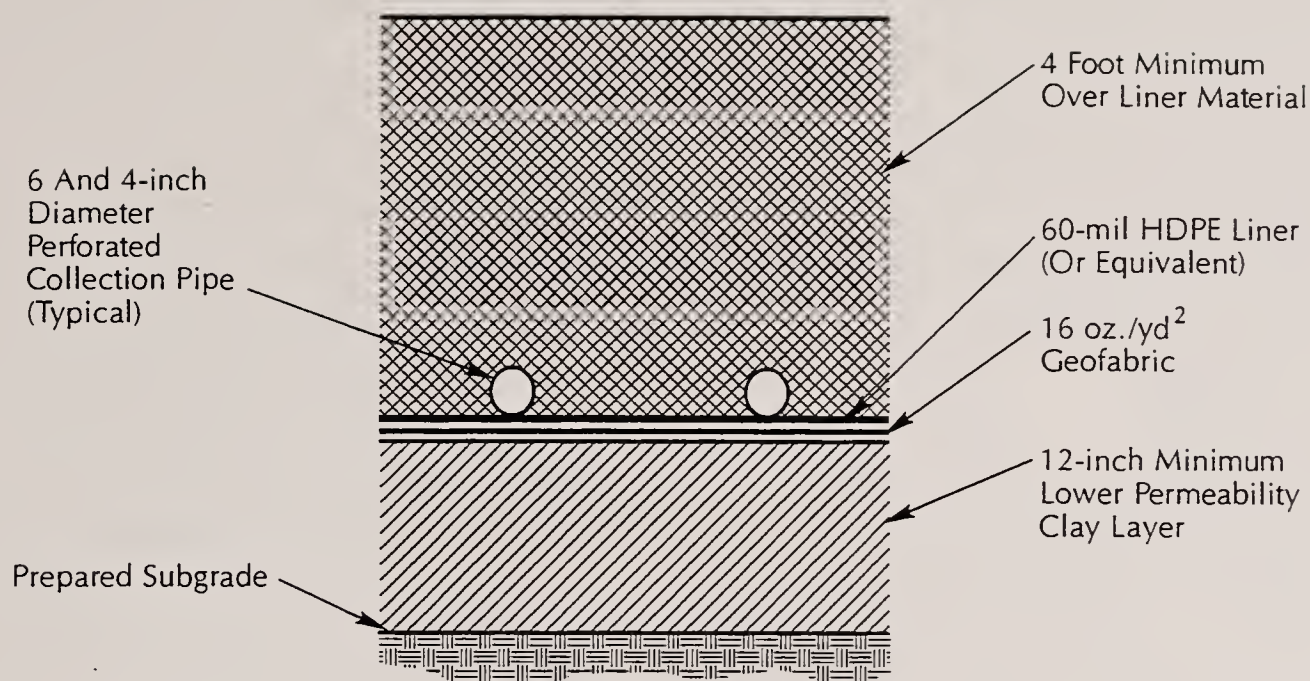
Ore that is delivered to the heap leach pads by conveyor or haul truck is stacked in layers, or lifts, that vary from approximately 15 feet to up to 30 feet in height. Once each layer is in place, a drip irrigation system distributes barren or intermediate processing solution across the top and sides of the heap. The solution percolates through the gold-bearing ore, which dissolves the gold and silver.

Application rates of the leach solutions vary depending on characteristics of the ore being leached and percolation rates. Typical rates range from approximately .002 to .007 gpm per square foot of ore. The gold-laden solution is collected at the bottom of the heap leach pad by a network of perforated gathering pipes laid on top of the flexible membrane liner. These slotted pipes drain into larger pipes which carry the solutions to the storage tanks.

The entire heap leach process is designed as a zero-discharge system. Solutions are recycled, and compensation for evaporation losses and moisture retention in the heaps is provided by make-up water. The same procedures used at the mine and described above would be utilized for the proposed expansion. Basic characteristics of the ore and processing rates would not change, so there would be no requirements to change existing heap leach procedures. However, the leach pad layout would be reconfigured and expanded, as shown in Table 2.0-1 and Figure 2.0-6.

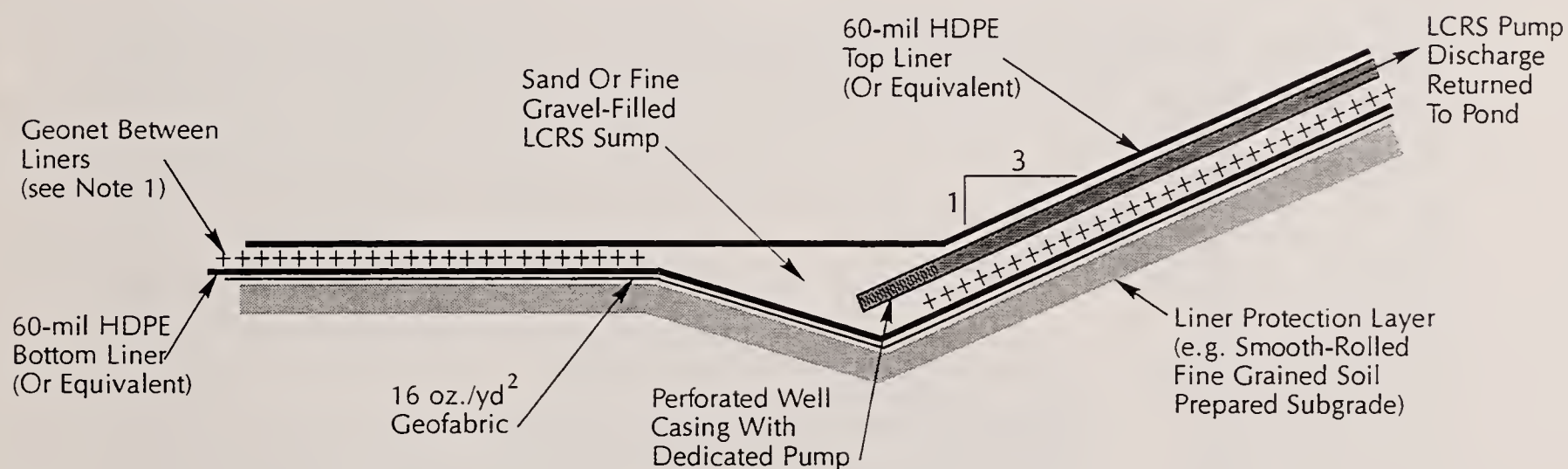
### *Solution Storage*

Viceroy designed and installed a new type of solution storage system to prevent wildlife access to process solution. The storage of solutions in steel tanks was an innovative design that has proved very successful. The



### Heap Leach Pad Composite Liner Detail

Not To Scale



### Solution Tank Basin and Stormwater Storage Basin Example Double Liner Detail

Not To Scale

#### Note:

1. These cross sections are intended to show typical liner system configurations for public information purposes and EIR/EIS evaluation. Actual configurations for the Castle Mountain Mine have been specified by RWQCB based on engineering performance standards that meet state regulations (CCR Title 23, Chapter 15).

### Heap Leach Pad/ Solution Storage Tank Liner Details

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-23



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

tanks are welded steel and have seepage collection, removal and leak detection capabilities approved by the RWQCB. The tanks are located at the downslope end of the heap leach pads, as shown on Figure 2.0-3. Photographs are shown in Figures 1.0-1 and 2.0-12.

The tanks sit in an overflow basin for stormwater; additional stormwater basins are adjacent. All of the heap leach, gold recovery, and stormwater facilities are surrounded by chain link fencing, and basins that could temporarily contain diluted processing solutions after a major rainstorm are netted. Characteristics of the tanks and associated basins are listed in Table 2.0-5.

### Gold Recovery

The gold recovery plant is shown in Figure 2.0-24. The plant includes curbs and a sump for fluid containment and collection. The basic components of the gold recovery plant include:

- Carbon adsorption columns to remove gold from the pregnant solution.
- Stripping columns, where gold is recovered from the carbon.
- Carbon reactivation and sizing facilities where the spent carbon is prepared for reuse.
- Bullion preparation area where electro-winning and melting processes are used to produce gold suitable for shipment. Slag from the melting process is packaged for shipment to an offsite smelter.

Ancillary facilities include storage areas for reagents. Areas where hazardous liquids are

used or stored are curbed or diked to contain potential spills and provide separation.

The gold recovery process involves carbon columns to remove gold from the leaching solution, stripping columns to remove gold from the carbon, and electrowinning tanks where gold is removed from solution by electroplating. In the initial part of the recovery process, gold attaches to the carbon, thereby removing it from solution. The cyanide solution from which the gold has been removed is recycled to the barren solution storage tank for reuse.

The gold-laden carbon is advanced to the stripping facility where it is pumped to an acid wash tank where any scale buildup on the carbon is dissolved. The carbon is then rinsed to return the pH to neutral or slightly alkaline, and the wash/rinse solution is pumped to the barren tank. The gold-laden carbon is then discharged into insulated pressure vessels where a heated cyanide solution strips the gold from the carbon. The stripping solution is then cooled and flows through electro-winning cells where gold is electrically plated onto steel wool. The gold-laden steel wool is washed with a high pressure water hose to dislodge the gold from the steel wool. The gold is collected, then melted in a furnace, producing a doré bar. The spent electrolyte from the electrowinning operation is recycled through the stripping circuit, and the stripped carbon is reactivated for reuse.

With the proposed expansion, the gold recovery plant and processing method would not change. The proposed amendments involve ores with similar characteristics to those currently being processed in the existing facility. Therefore, no changes to the gold recovery process would be required.





Comminution circuit. From right to left: mill building, agglomeration unit (right foreground), conveyor and surge pile. View northwest.



Gold recovery plant. Bulk cyanide storage tank at right. View northeast.

## Structures and Facilities Photographs



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

<b>TABLE 2.0-5 PROCESS SOLUTION STORAGE TANKS AND HEAP LEACH STORMWATER STORAGE BASIN CHARACTERISTICS</b>			
<b>Containment Tanks</b>	<b>Number</b>	<b>Capacity (mil. gal.)</b>	<b>Status</b>
Intermediate Tank	1	0.5	Existing
Pregnant Tank	1	0.5	Existing
Barren Tank	1	0.5	Existing
<b>Containment Basins</b>	<b>Number</b>	<b>Net Capacity (mil. gal.)</b>	<b>Status</b>
Emergency Storage Basin (Secondary Containment for Process Tanks)	1	5.5	Existing
Stormwater Retention Pond #1	1	4.0	Existing
Stormwater Retention Pond #2	1	5.0	Existing
Stormwater Retention Pond #3 (Through Phase 1)	1	5.5	Proposed
Stormwater Retention Basin #4 (Through Phase 1)	1	5.5	Proposed
Stormwater Retention Basin(s) (Through Phase 2)	2	5.0 million gallons ea.	Proposed

Source: Castle Mountain Mine Plan Amendment Application

### Ancillary Facilities and Infrastructure

Requirements for water, power and communications for the existing mine are described below. These requirements would remain the same for the proposed expansion; no additional power or communications facilities would be needed. The existing utilities are shown in Figure 2.0-25. Established water use would likely be maintained, and the maximum permitted amount is proposed to be reduced.

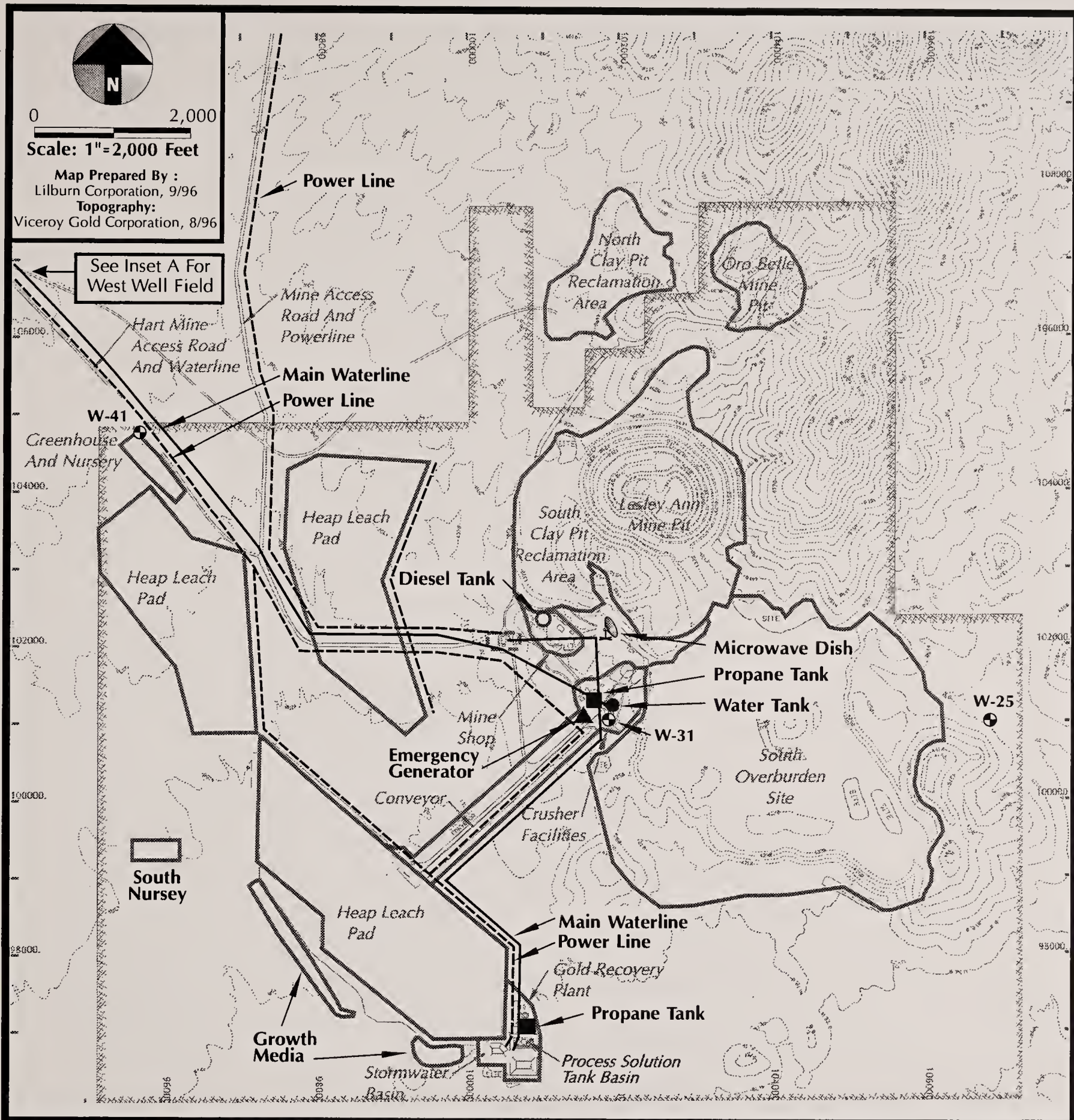
#### *Water*

Water is required primarily for the heap leach process and for dust control. Water requirements were estimated in the Previous

EIS/EIR as being approximately 725 acre-feet per year at a rate of approximately 450 gpm. Actual daily requirements vary due to changes in temperature and evaporation and have proven to be much less than 725 acre-feet per year. Water use since pumping commenced in 1991 through June 1996 has been 2,074 acre-feet, (between 400 and 500 acre-feet per year). This rate is expected to continue with the extended operation.

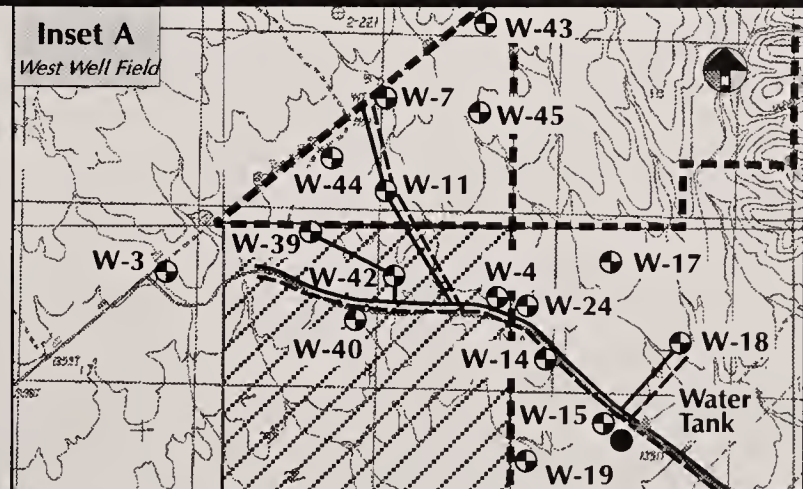
Maximum permitted water use for continued mine operation is therefore proposed to be reduced by 100 acre-feet to 625 acre-feet per year. Average annual use is expected to be within the range of existing use.





## Legend

- |  |                             |  |                                  |
|--|-----------------------------|--|----------------------------------|
|  | Existing Topography         |  | Diesel Fuel Storage Tank         |
|  | Original Mine Site Boundary |  | Propane Tank                     |
|  | Permitted Facilities        |  | Water Tank                       |
|  | Service Road                |  | Existing Well and Identification |
|  | Main Waterline              |  |                                  |
|  | Power Line                  |  |                                  |



## Utilities

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-25



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Water is obtained from the West Well Field, located approximately 12,000 feet northwest of the mine. The well field presently consists of 13 wells with depths to water that range from approximately 400 to 525 feet. Up to 20 wells may ultimately be completed.

Since mid-1995, seepage of water has occurred into the Jumbo South-Lesley Ann mine pit. This water has been utilized for dust control, and it supplements water pumped from the West Well Field, thereby reducing the amount needed. The Applicant intends to continue using both the mine pit area and the West Well Field to supply the maximum permitted demand of 625 acre-feet per year (approximately 100 gpm) from the mine pit and (287 gpm) from the West Well Field. If the mine pit area cannot supply 100 gpm, the balance would be withdrawn from the West Well Field as was initially expected in the Previous EIS/EIR.

After active processing ceases in the year 2010, water demand will curtail sharply to approximately 1 to 2 gpm (2.3 acre-feet per year) for the next 10 years. This volume could be obtained from any one well in the West Well Field or from the mine pit area, assuming that the wells and pumps there remain operative after pit backfilling.

### ***Power***

Power is required for a variety of uses, primarily for the crusher, fine crushing and conveying circuit, process plant, solution circulation pumps and groundwater well pumps. There also are requirements for 24-hour lighting and for the administration and maintenance facilities.

Power is provided to the site by a 69kV power line extending from a substation at

Searchlight, Nevada to the site via the mine access road.

Electric metering devices and disconnect switches are located at the Walking Box Ranch headquarters. The power line between the headquarters and the mine site is owned, operated, and maintained by the Castle Mountain Venture.

### ***Communications***

Telephone communication is provided via an onsite transmitter/receiver station and regional microwave facilities. An underground cable extends from the station to telephone switchboards at the maintenance shop and administration building. Implementation of the proposed Mine Plan Amendments would involve no changes to these facilities.

### ***Equipment, Structures, and Supplies***

Because the proposed expansion would mine ores and overburden materials at the same rate as the existing mine, the same equipment, structures and supplies as utilized for the existing operation would be utilized. The same reagents in the same general quantities would be used for the proposed expansion. No changes would be required.

An administration building and a mine shop are located near the center of the mine site as shown on Figures 2.0-3 and 2.0-4. Photographs of the mine shop and administrative building are shown in Figure 2.0-26. The administration building is an approximately 10,000 square-foot structure with offices, meeting rooms, lunch room, locker space, and warehouse area. A parking area is adjacent for use by employees, company vehicles, and visitors. There is suitable access for handicapped persons. The mine shop is used for equipment maintenance



Photograph: Lilburn Corporation Date: 11/96



Administration building. View east.

Photograph: Lilburn Corporation Date: 11/96



Mine shop. View east.

## Structures and Facilities Photographs



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

and includes an office for mine administration and warehousing space for mobile equipment parts. It is a steel structure of approximately 15,000 square feet. A truck-ready line and other equipment parking are located at this site.

Major operating supplies consist of fuel and oil for vehicles and machinery, reagents for ore processing, and explosives for mining. Fuels and oils are stored onsite. Tanks for these fuels and oils are installed on prepared foundations enclosed with berms adequate to contain the contents of the tanks in the event of a leak or rupture, as determined by the County of San Bernardino Department of Environmental Health Services (DEHS). Storage facilities for reagents such as sodium or calcium cyanide and hydrochloric acid also include secondary containment for spills. A Spill Prevention, Control, and Countermeasures Plan (SPCCP) has been developed in accordance with County requirements detailing the storing and handling of reagents and procedures for responding in the event of a spill. A Business Plan has also been developed in accordance with County requirements describing the facilities for storage of hazardous materials and emergency response procedures. A Risk Management Prevention Plan (RMPP) specifically addresses the management of the cyanide bulk system.

Explosives and other blasting agents are stored in facilities constructed and maintained in accordance with federal and local permit requirements.

### **Drainage Control**

There are no permanently flowing streams on the site. An ephemeral streambed passes through the western portion of the mine site.

The leach pad is located to avoid the streambed. Roads are provided with protected stream crossings and culverts, where necessary.

Individual facilities are protected with diversion ditches to direct surface runoff into the existing drainages. These ditches and culverts are in accordance with requirements of the County of San Bernardino (County) and RWQCB.

The same types of drainage control would be utilized with the proposed expansion. Due to the changes to the boundaries of the mine pits, overburden disposal area and heap leach pad, new drainage controls would be developed to accommodate changes in storm flow, as needed.

### **Access and Traffic**

#### ***Onsite Roads***

Onsite roads connect each of the facilities described above. Service roads are generally 25 feet wide. Haul roads are approximately 60 feet wide, and are designed to accommodate more than one vehicle at a time and provide high visibility for drivers. Unescorted visitors are not allowed on mine site roads.

The mine plan amendments would involve extension of haul roads associated with development of the expanded mine pits and new overburden storage site. This construction is consistent with changes that typically occur over the life of an operating mine, as mine pits, heap leach pads and overburden disposal areas are expanded. No new types of construction or other changes would be required.



### ***Offsite Access Roads and Traffic***

Daily operational traffic includes buses and vehicles for personnel, deliveries, and visitors. The daily traffic for the operating mine is approximately 55 vehicles per day at the site, mostly related to employee transportation. There is less traffic on weekends, as fewer personnel are on duty, and deliveries of equipment and supplies are normally not scheduled for weekends.

The location of the primary access to the site was the subject of intense scrutiny in the Previous EIS/EIR, as available routes into Lanfair Valley from Ivanpah Valley (from the northwest) and Piute Valley (from the northeast) crossed high-density desert tortoise habitat. The selected alignment of the mine access road from Piute Valley specifically avoided such habitat. This access route is shown in Figure 2.0-2.

The extended period of operation would not increase the demand for employees. Therefore, there would be no changes to the volumes of traffic.

## **Employment, Hours of Operation, and Health and Safety**

### ***Employment and Hours of Operation***

The Castle Mountain Mine operates 24 hours a day, 7 days a week and employs approximately 200 persons. Approximately 150 are onsite during normal weekday hours (typically 10 management staff and 140 mining, processing, and maintenance staff). Weekend staffing is less, typically at approximately 100 employees. The extended operating period would not change the work schedule and or staffing requirements.

### ***Security, Health, and Safety***

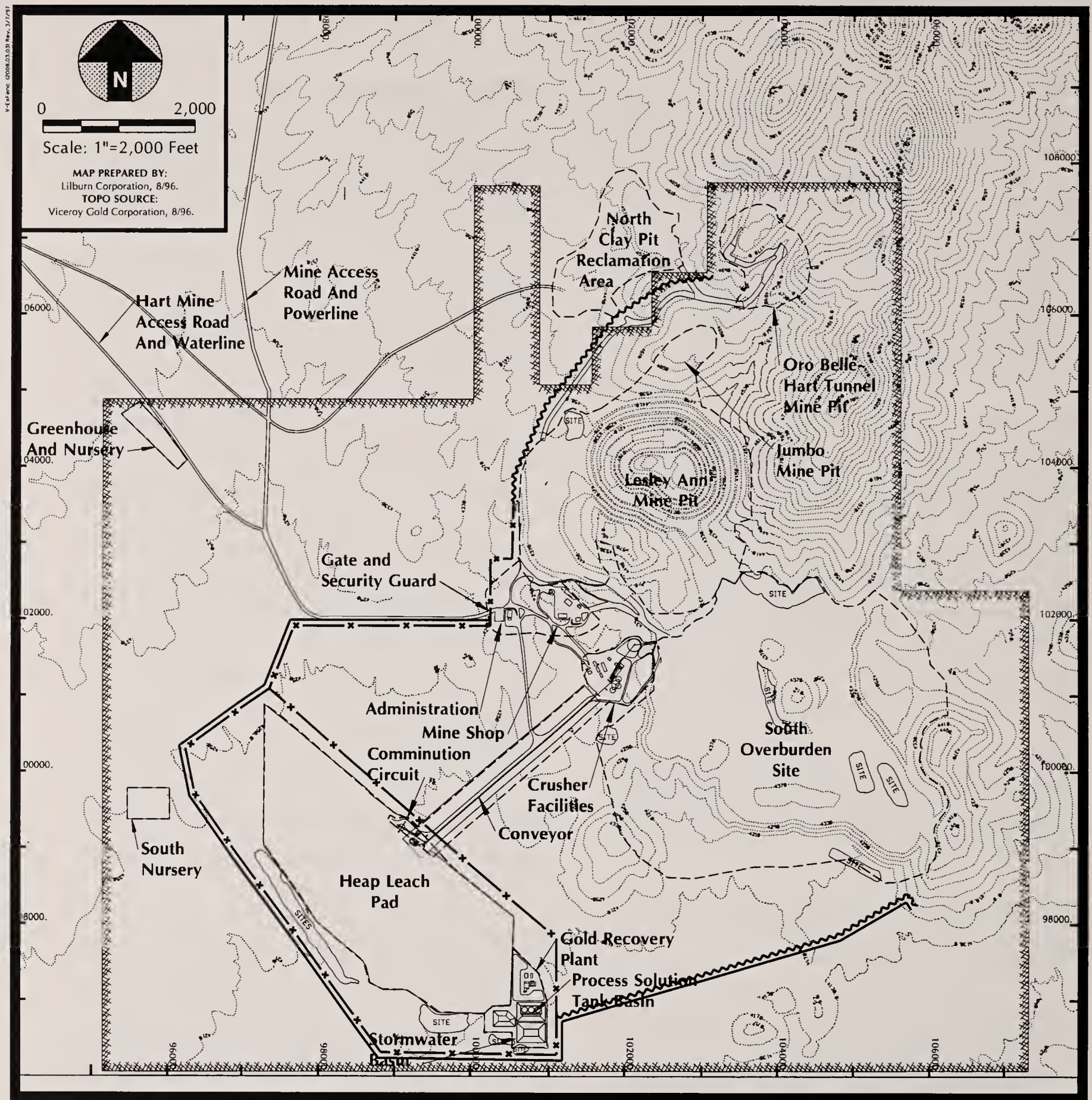
Operations are conducted in accordance with Mine Safety and Health Administration (MSHA) requirements. Security and safety measures are implemented to protect mining and operations personnel and the general public. These measures include the establishment of barriers such as fencing, berms, and signs, and implementation of safety training procedures.

Fencing is used to control access and prevent unauthorized personnel from entering potentially hazardous areas. The main access road enters the mine at the site of the Administration Building, which is a gated, guarded entrance. Visitors must sign in, receive appropriate safety equipment and be escorted. Barbed wire fencing is used to prevent access to mine pits and overburden storage sites. Chain link fencing surrounds the heap leach area and solution storage tanks; chain link topped with razor wire surrounds the gold recovery plant. Fencing to prevent access by desert tortoises to operations areas is attached to chain link fencing. Existing fencing is shown in Figure 2.0-27.

Other barriers include earthen berms to restrict vehicle access at the mine pits, the crest of the overburden site and along haul roads. Warning signs are posted on the perimeter fencing and at potential access points. Road signs and maximum speed limits are posted along the mine access road and along onsite roads.

Two 8,000-gallon water trucks would be available to assist fire fighting efforts by providing a mobile source of supplemental water. This water would augment the existing capacity of fire fighting equipment.





## Legend

	Existing Topography		Chain Link Fence
	Roads		Barbed Wire Fence
	Site Boundary		Chain Link Fence with Tortoise Exclusion
	Major Facilities		Barbed Wire Fence with Tortoise Exclusion

## Existing Fencing



Identical safety measures would be employed in association with the continued operation of the mine. Berms and fencing would be moved, as necessary, to accommodate changes in the boundaries of facilities. This fencing would be extended for the Proposed Action, as shown in Figure 2.0-28. Such procedures are consistent with those that occur during current mine operations as facilities expand.

### 2.2.7 Phasing

The Applicant's Mine and Reclamation Plan depicts multiple annual stages of mine development; for such detail, the reader is referred to the Application. However, for purposes of the environmental analysis, the Proposed Action is more simplistically described as designed to be completed in two basic phases:

- **Phase I:** Additional ore found between the Oro Belle and Lesley Ann Pits in the Hart Tunnel area, and below the floor of the Oro Belle Pit (as it was designed in 1990) would be mined north and east and southeast as well as deepening of the Oro Belle Pit. Overburden from this mining would be placed in the North Overburden Site, and begin additional backfilling into the Lesley Ann Pit. Overburden could also be placed adjacent to the Oro Belle-Hart Tunnel Pit, if further mining in that area is not anticipated as part of Phase II. Backfilling of the Lesley Ann Pit would continue until the toe of the overburden reaches a point so as to permit construction of a haul road out of the South Extension Pit.
- **Phase II:** An expansion of the remaining wall of the Lesley Ann Pit would be accomplished to mine the South Extension

deposit. "Push-back" of the high walls of the Jumbo Pit and the north and east high walls of the Oro Belle-Hart Tunnel Pit is also planned. The push-backs would be necessary to mine ore zones at a depth below the Phase I designed floors in the Jumbo and Oro Belle Pits. Sequential backfilling of the Lesley Ann-Jumbo pits would continue during this phase as the Oro Belle-Hart Tunnel Pit and South Extension deposits are mined. At the completion of this phase, backfilling of the Lesley Ann-Jumbo Pits would reach elevations similar to pre-mining contours on the drainage floor. Phase II mining would involve higher stripping (overburden mining) ratios than are needed to complete Phase I. As a consequence, Phase II mining would be less profitable and could proceed only under a favorable combination of metal prices, metallurgical recoveries, and operating costs.

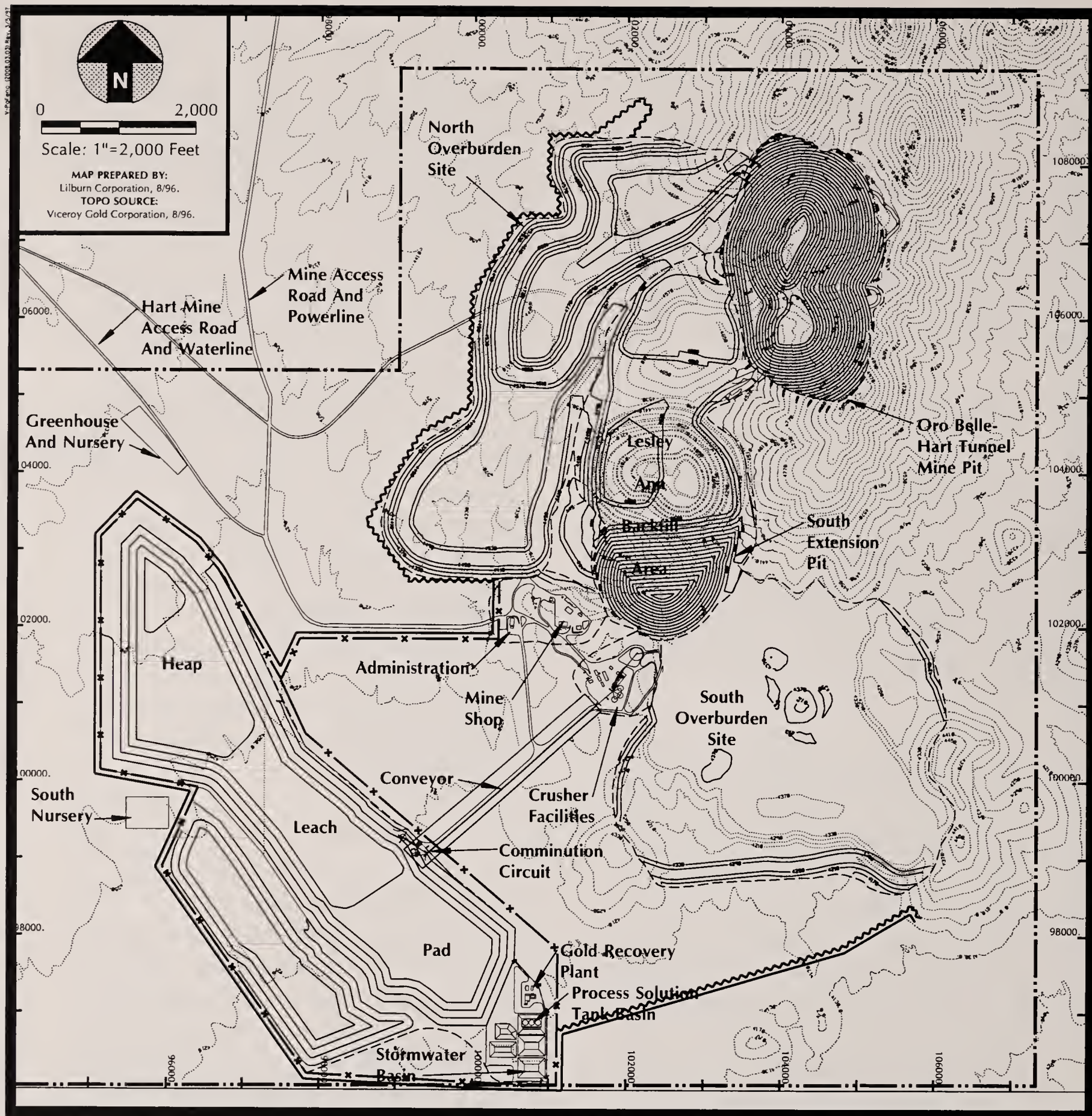
### 2.2.8 Reclamation

#### Reclamation Plan Overview

The Castle Mountain Mine has an approved Reclamation Plan in compliance with the FLPMA, SMARA, and County Regulations. As the site is located in a remote area and involves public lands, the reclamation objective is to return the site to open space and wildlife habitat, while providing for future mining opportunities that could exist.

The applicant has submitted modifications to incorporate reclamation of proposed additional mine pit areas, overburden, and heap leach pad areas into the reclamation plan. The amended reclamation areas are illustrated in Figure 2.0-29. Surface types and treatments are summarized in Table 2.0-6.



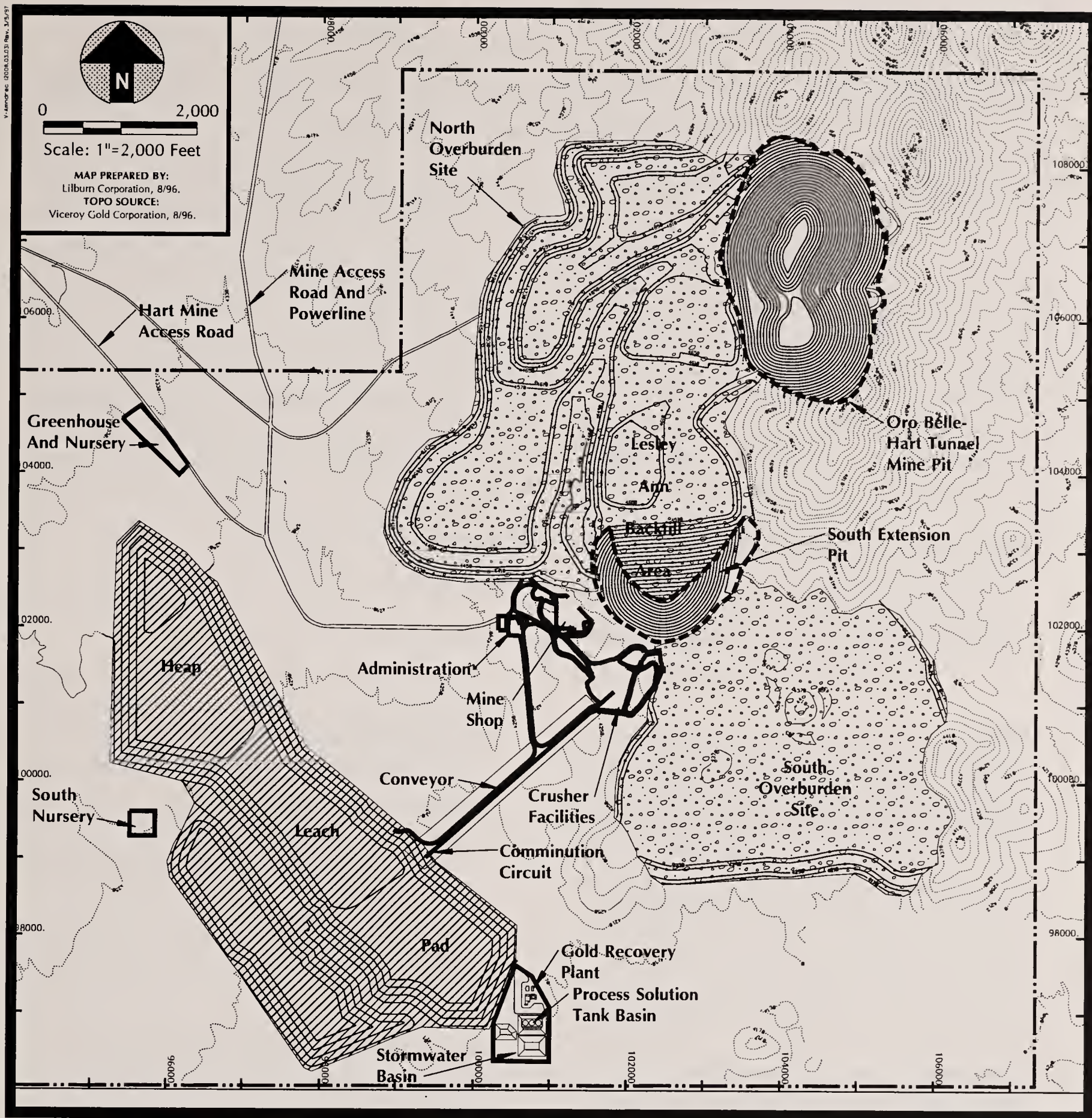


## Legend

- |  |                     |  |                            |  |   |
|--|---------------------|--|----------------------------|--|---|
|  | Existing Topography |  | Amended Mine Site Boundary |  | Chain Link Fence                          |
|  | Roads               |  | Proposed Contours          |  | Barbed Wire Fence                         |
|  |                     |  | Major Facilities           |  | Chain Link Fence with Tortoise Exclusion  |
|  |                     |  |                            |  | Barbed Wire Fence with Tortoise Exclusion |

## Proposed Action: Security and Tortoise Fencing





## Legend

- Existing Topography
- Disturbed Area Final Contours
- Amended Mine Site Boundary

## Generalized Reclamation Summary

Mine Use	Surface Type	Reclamation Treatment
Mining.....	Rock walls, benches..... and floor, broken rock where backfilled	Rip floors and haul roads, place growth media, revegetate pit floors and haul roads
Overburden.....	Broken Rock.....	Scarify Haul roads. Grade faces to scallop surface. Place growth media, revegetate.
Heaps.....	Crushed and processed ore	Wash heaps. Regrade slopes to 2.5:1. Place growth media.
Buildings, Growth Media Storage, Roads, Other	Stockpiles, compacted earth	Remove/Relocate growth media. Scarify compacted surfaces. Place growth media, revegetate.

## Amended Reclamation Plan

**LILBURN**  
CORPORATION

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-29



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

**TABLE 2.0-6  
GENERALIZED RECLAMATION SUMMARY**

Site Areas	Surface Type	Acres	Reclamation <sup>(1)</sup> Treatment
Mining	Rock walls, benches and floor, broken rock where backfilled	310	Rip floors and haul roads, place growth media, revegetate pit floors and haul roads. Sequentially backfill Lesley Ann and Jumbo Pits and partially backfill South Extension Pit.
Overburden	Broken rock	525	Scarify haul roads. Grade faces to scallop surface. Place growth media, revegetate.
Ore Heaps	Crushed and processed ore	420	Rinse heaps. Regrade slopes to 2.5:1. Place growth media. Revegetate.
Other <sup>(2)</sup>	Compacted earth	145	Scarify and revegetate

**NOTES:**

- (1) This table is only intended to show very generalized reclamation. Refer to the Viceroy Application for a complete description of reclamation activities.
- (2) Includes growth media piles, nurseries, roads, buildings and parking areas, process basin areas.

### ***Bonding***

In order to ensure compliance with the Plan of Operation and Reclamation Plan under SMARA, the Applicant was required to post a security bond jointly with the County and BLM. The bond is adjusted annually to reflect the actual amount of surface disturbance, planned disturbances over the next year, and the amount of reclamation completed. The principal amount of the BLM/County surety bond currently in place is \$1,605,000. Reclamation costs due to additional surface disturbance through 1996 were projected at \$1,890,100.

### ***Goals and Objectives***

The Goals and objectives of the existing Reclamation Plan are:

- Revegetate disturbed areas;
- Place excavated materials in a safe, natural configuration that minimizes erosion;

- Establish plant communities similar to those existing on undisturbed areas;
- Establish the natural growing conditions for revegetation plant species;
- Enhance the visual appearance of the area; and
- Establish micro-habitats for desert vertebrates.

### ***Evaluation of Reclamation Success***

Success criteria were established for revegetation efforts through consultation with the County, BLM, the State Department of Conservation, Division of Mines and Geology, the Desert Studies Consortium, and representatives of several interest groups. Since revegetation in semi-arid areas usually proceeds very slowly, particularly during periods of drought, a 10-year monitoring period was selected to measure the establishment of plant populations.

The criteria for reclamation success is based on expectations for plant density and diversity, as compared to control plots. Density and diversity were chosen because they are ecologically important measures. Density is the number of live perennial individuals per unit area. Plant diversity is the number of different species (with live individuals) per unit. These are compared against the density and diversity of perennial species on control plots undisturbed by current mining selected within representative areas of the mine site. The goals expressed as compared to the control, are as follows:

	Density	Diversity
5-Year Goal	6%	4%
10-Year Goal	21%	15%

Initial reclamation efforts commenced in 1991, and the first annual Revegetation Report was completed. Annual Revegetation Reports are being used in conjunction with onsite reviews by responsible agencies to adjust density and diversity goals, to reflect appropriate site-specific rates of recovery.

### ***Revegetation Research Program***

A Revegetation Research Program has been established at the Castle Mountain Mine. The program, which is directed by a Viceroy employee with a doctorate degree in ecology, utilizes both Viceroy employees and outside contractors. Areas of research currently under way are:

- **Seed Collection and Testing:** Seed is collected locally whenever conditions are favorable. Field tests are underway to determine which species of seed should be used in seeding for revegetation.

- **Trials for the Establishment and Persistence of Seed and Nursery Stock:** Tests of seeding, transplanting of salvaged plants and greenhouse grown plants are being conducted in revegetation sites on the mine.
- **Inoculation Trials:** Salvaged growth media piles have been tested for their maintenance of mycorrhizal fungal inoculum potential over time. Local cultures of mycorrhizal fungi have been developed and will be tested in inoculation trials in the greenhouse and the field.
- **Transplanting Procedures:** A database containing data on each individual plant salvaged to the nurseries is providing the first detailed data on salvage methods for barrel cacti and Yucca species.
- **Hardening Protocol for Greenhouse Grown Stock:** Hardening protocols are being developed to prepare greenhouse plants for outplanting to revegetation sites.
- **Field Trial on the Successful Transplant of Wildlings:** Transplant of wildlings is being evaluated using native plants salvaged from areas that are scheduled for disturbance.
- **Mulch Field Trials:** Test plots using mulches have been done to determine the degree of protection they provide to the soil surface from wind and water erosion, and to determine if microbial biomass soil moisture and nutrient content can be enhanced.
- **Heap Leach Substrates:** Test plots to determine the need for substrate modifications have been established.



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The results of the research program are reported annually in the Revegetation Report published each January. Copies of this report are circulated to the County, BLM, the State, and the members of the Revegetation Review Committee. Papers reporting the results of the program are presented in professional journals, and at meeting/conferences of organizations dealing with the revegetation of disturbed sites.

### ***Revegetation Review Committee***

The Revegetation Review Committee met for the first time on May 13, 1991. The creation of this committee was anticipated in Condition No. 105 of the County's Conditions of Approval and Stipulation No. 24 of the BLM's Record of Decision.

The Committee, which consists of an arid lands revegetation expert, a geologist/hydrologist, an arid lands ecologist, three representatives of the environmental community, and one representative each of the County, BLM, the State Division of Mines and Geology, and Viceroy, meets annually to review each annual Revegetation Report.

Based on its review, the Committee may make recommendations to the agencies regarding the effectiveness of revegetation, including the research efforts and adjustments to revegetation goals. The Committee has recommended changes to the specificity of vegetation salvage requirements, as described in Section 2.2.5 of this EIS/EIR.

### **Concurrent Reclamation**

Reclamation begins as activities in an area are discontinued, such as when large sections of an overburden site have been brought to final grade (usually in 40- to 50-acre increments). Ground surfaces will be prepared for

revegetation by recontouring, scarifying and placing growth media in soil islands. Transplanting and seeding utilize procedures developed through revegetation activities and the revegetation research program. Ongoing revegetation and reclamation are shown in Figures 2.0-30 through 2.0-33.

### ***Wildlife Habitat***

The post-mining land use goal for the mine site is open space and wildlife habitat. Wildlife using the mine site are generally common species typical to the Mojave Desert. Wildlife habitat on disturbed areas will be re-established as revegetation occurs. Mine shafts and adits from former workings are to be either left open or closed in a manner that provides for public safety, while providing access for bats and other wildlife species that may use them as habitat.

### ***Drainage/Erosion Control***

Cuts and fills that occur in response to operational needs are designed to avoid excessive erosion, and grading plans are subject to review and approval by the County. During reclamation of various areas, surfaces are contoured for proper drainage and to limit erosion. Revegetation further enhances erosion control.

### ***Public Safety***

Public safety measures during operations involve access restriction and informational signs. At project completion, public safety will be maintained by measures that include slope stabilization, removal of buildings, structures and equipment, use of barriers such as berms to discourage vehicular access into mine pits, or signage.

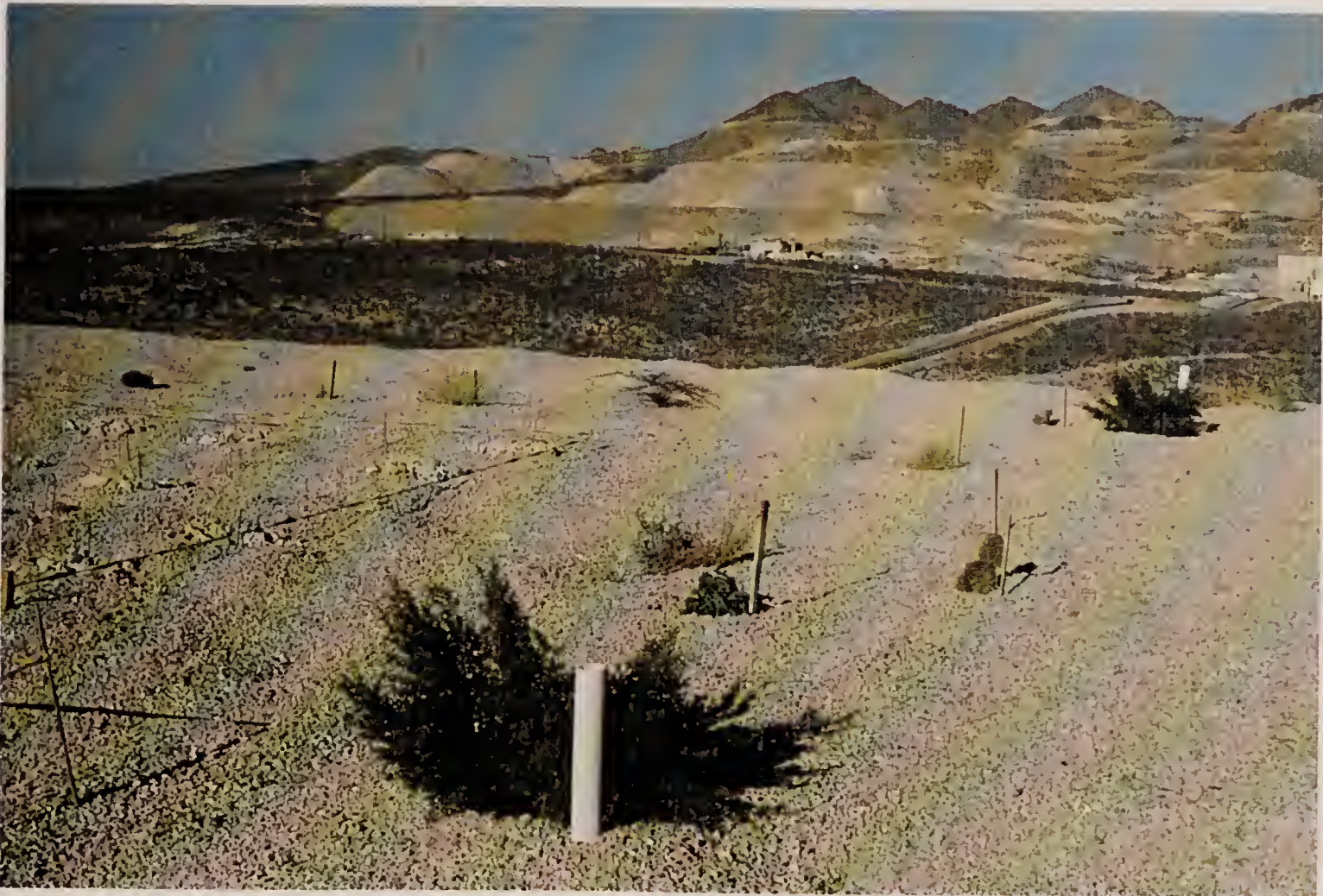


Photograph: Lilburn Corporation Date: 11/96



Sample of representative revegetation species propagated for reclamation, including blackbrush, creosote bush, and yucca.

Photograph: Lilburn Corporation Date: 11/96



Revegetation testing on heap leach pad. View north.

## Revegetation Photographs

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 2.0-30



Photograph: Lilburn Corporation  
Date: 11/96



Revegetation area on a reclaimed mine exploration road. Over eight species of salvaged and transplanted plants were used, plus seeding. Revegetation is 12 months old. View northeast.

Photograph: Lilburn Corporation  
Date: 11/96



Revegetation area on the South Overburden Site. Planted species include Joshua Tree, Mojave Yucca and barrel cactus. View south.

## Reclamation Photographs



Photograph: Lilburn Corporation Date: 11/96



Overburden contouring, growth media placement and revegetation area on South Overburden Site. View east.

Photograph: Lilburn Corporation Date: 11/96



Slope contouring at south end of heap leach pad. View east.

## Reclamation Photographs



Photograph: Lilburn Corporation Date: 11/96



Growth media stockpile adjacent to heap leach pad. View northwest.

Photograph: Lilburn Corporation Date: 11/96



Growth media on an overburden bench. View south.

## Reclamation Photographs



## **Final Reclamation**

This aspect of reclamation will occur at the cessation of mining operations and will emphasize measures to protect public health and safety and provide for completion of revegetation. Major facilities will be reclaimed as discussed below:

### ***Mine Pits***

The Lesley Ann and Jumbo Pits would be completely backfilled at the completion of Phase II. The South Extension Pit will be partially backfilled (approximately one-half of the pit would be filled to the previous drainage floor surface; the other half would be a mine pit bounded by a rock scree slope and a mine pit wall) as mining proceeds in other pits. This will result in the creation of approximately 140 acres of former pits that will be backfilled to the elevation of the valley floor, as shown in Figure 2.0-9. Upper walls of the mine pits will be stained to reduce color contrasts, as necessary. Benches and floors of the Pits will be revegetated.

### ***Underground Facilities***

Underground mining would be very limited in time and scope. Ore produced would be delivered to the heap leach pad and reclaimed as part of that surface. Overburden would be backfilled into the Lesley Ann Pit and reclaimed as part of that area. Mine access drifts would be barricaded with broken rock to prevent the possibility of future public access.

### ***Overburden Storage Sites***

The South Overburden Site is bounded by small hills, while the North Overburden Site is located on the face of lower slopes of the Castle Mountains in an area previously excavated for clay mining. Reclamation will include the modification of the topography of the overburden storage sites. The crest and

southern face of the existing South Overburden Site, and the crest and western face of the North Overburden Site will be contoured through regrading. Regrading operations, including shaping and recontouring, will alter the straight line topography resulting from mining to better conform to the topography of naturally-occurring slopes. Mounding of overburden would also occur to reduce the straight line geometrics on top. Slope faces would be graded to scallop the surface.

Darker colored overburden, as available, would be selectively placed to darken portions of the outer slopes to reduce color contrasts of light-colored rock.

To prepare the surface for revegetation, a final lift of rock on the top of the overburden storage sites will be "layer dumped" over the surface of the overburden pile, and/or the surface of the pile will be ripped as deeply as necessary to minimize compaction. Available growth media will be placed on the surface in "soil islands" to maximize the benefits to be provided by the limited volume of growth media available. Revegetation will be completed in accordance with the revegetation program. Examples where this process has been completed are shown in Figures 2.0-32 and 2.0-33.

### ***Heap Leach Piles and Solution Storage Tanks***

Processed ore at the heap leach pad will be neutralized and decommissioned by circulating rinse water in accordance with RWQCB procedures. The rock will then be stabilized through regrading and slope reduction (refer to Figure 2.0-33). Side slopes will be flattened to a 2.5H:1V slope. Slope reshaping will reduce slope angles to better



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

conform to naturally-occurring landforms near the Lanfair Valley floor. Growth media will be distributed in soil islands, as available. Surfaces will be scarified and revegetated. In 1995, testing to determine methods for revegetating on the processed ore began on a 100-foot by 100-foot section on the top of the heap leach pad, without the use of growth media (refer to Figure 2.0-30).

Solution in the storage tanks will be neutralized, drained from the tanks and evaporated in accordance with RWQCB requirements. The tanks will be rinsed, disassembled, and removed. The underlying containment pond liners will be tested according to RWQCB requirements, then removed and recycled offsite or hauled to a permitted landfill, or disposed on private land as permitted by the County. The surface will be graded and revegetated.

### ***Buildings, Structures, and Roads***

Buildings, structures, and fencing not needed for continued reclamation and monitoring will be dismantled and removed from the site. Concrete footings, slabs, and foundations will be broken and removed from public lands. Concrete may be disposed on private land (in overburden or mine pit areas) as permitted in County regulations. Building sites, roads, parking lots, and portions of access roads will be regraded, scarified, and revegetated in accordance with the revegetation program. Aboveground utilities will be removed. Underground lines will be capped and covered. All other equipment and materials will be removed from the site. Certain facilities in the well field will be offered, *gratis*, to the BLM and/or National Park Service.

## 2.3 ALTERNATIVES TO THE PROPOSED ACTION

### 2.3.1 No Action Alternative

The No Action Alternative would not include any of the proposed modifications to the existing operation described in Section 2.2, such as an extended period of operations, site plan modifications, or modifications to conditions and stipulations.

### **Site Plan and Major Components**

The No Action Alternative would limit continued development and operation of the Castle Mountain Mine as provided in existing permits and approvals. The No Action Alternative would result in completion of mining in approximately mid-1997, the resulting site plan is shown in Figure 2.0-34.

Key development and operating parameters include:

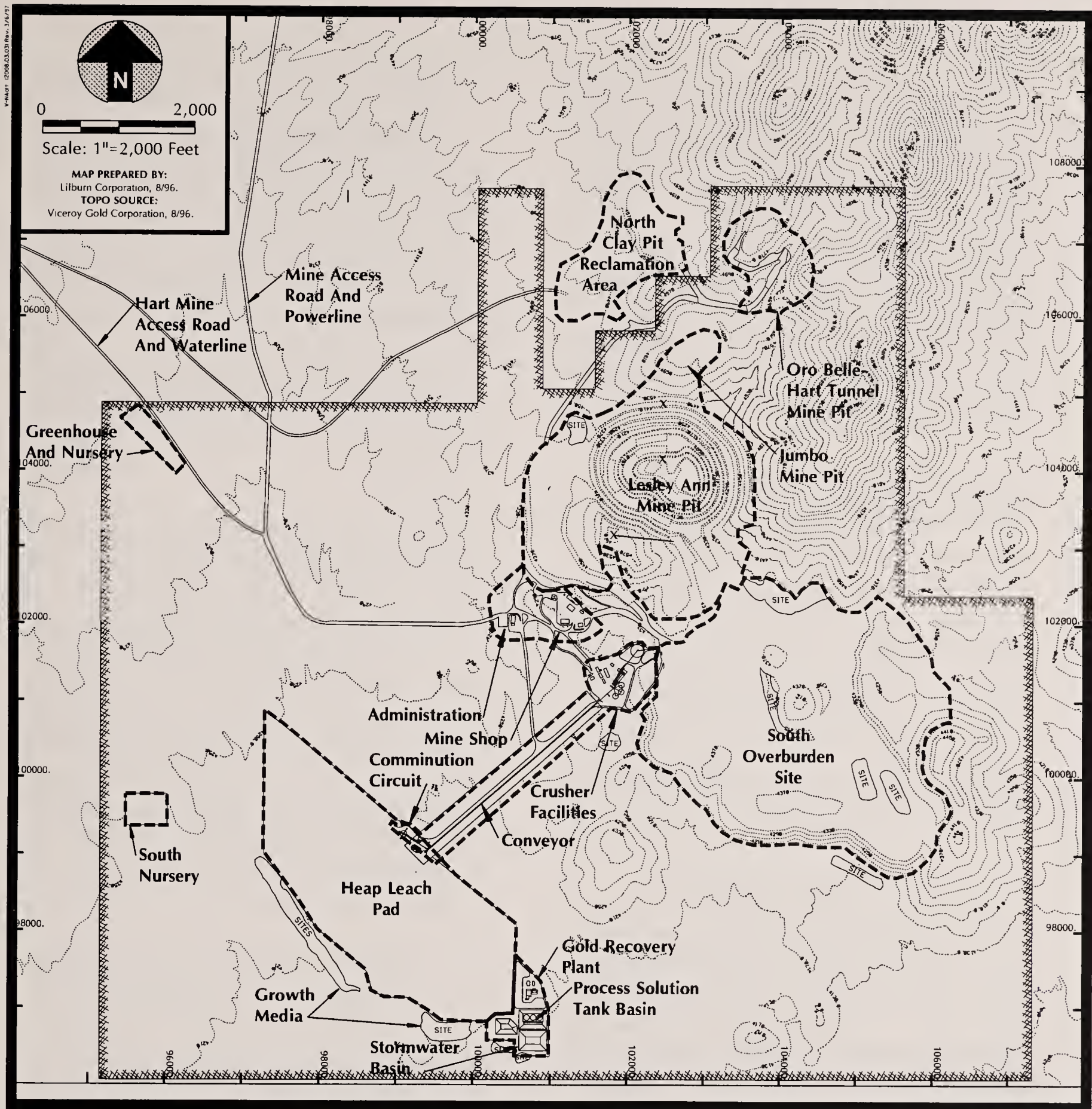
- Tons of Ore Processed:  
30 MT<sup>1</sup> (13.5MT)<sup>2</sup>
- Tons of Overburden Mined:  
60 MT (16.5MT)<sup>(2)</sup>
- Surface Disturbance:  
890 acres (320 acres)<sup>(2)</sup>
- Period of Operations:  
10 years (1 to 3 years)<sup>(2)</sup>
- Final Reclamation Period:  
5 years (5 years)<sup>(2)</sup>

---

<sup>1</sup>MT - Million Tons

<sup>2</sup>Total for Mine (Approximate Total from Existing Conditions to Completion)





## Legend

- Existing Topography
- Roads
- Site Boundary
- Major Facilities

Facility	Acres
Open Pits.....	135
Overburden Storage Sites*.....	300
Leach Pads*.....	330
Growth Media Piles/Nurseries.....	70
Roads.....	30
Crushing Area, Administration Building, Parking, Mine Contractor's Shop, Warehouse.....	15
Process And Basin Areas.....	10
<b>TOTALS</b>	<b>890</b>

\* Permitted total areas of these facilities not shown; permitted areas would not be entirely used under this alternative.

## No Action Alternative

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Figure 2.0-34



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The No Action Alternative would terminate the operation in approximately 2000, with final reclamation complete in approximately 2005. The heap leach pad would be completed approximately in its present position. Overburden would be placed primarily at the South Overburden Site, with lesser amounts placed as fill over the previously excavated north and south clay pits. Two mine pits would exist; mine pit backfilling would be limited to some side-slope fill of the Lesley Ann Pit.

### Facilities and Operations

Support facilities and methods of operation for the No Action Alternative would be the same as for the Proposed Action. Mining and processing methods established in the approved permits would not change. Support facilities, including crushing, conveying, comminution circuit, process plant, storage tanks and basins, contractors shop, administration building, greenhouse and tree farm, utilities, and access roads are in place and would not be modified.

### Key Environmental Issues

The Castle Mountain Mine has completed approximately 60 percent of the previously designed and permitted facilities, as shown in Table 2.0-1. Current surface disturbances total approximately 545 acres. The No Action Alternative would result in continued operation of the Castle Mountain Mine with no more than 340 acres of additional surface disturbances beyond existing conditions.

Environmental consequences of the No Action Alternative were addressed in the Previous EIS/ EIR. Key issues included:

- **Water Resources**

- Potential for groundwater withdrawal to affect surface flows at Piute Spring
- Potential for soil or groundwater contamination from toxic chemicals

- **Vegetation**

- Removal of vegetation and rate of recovery following reclamation

- **Wildlife**

- Habitat disturbance, especially for the threatened desert tortoise
- Potential impacts to bats using former mine workings as habitat
- Potential for exposure of wildlife to process (cyanide) solution
- Potential to increase raven populations that could prey on desert tortoises

- **Visual Resources**

- Consistency with Visual Resource Management objectives while continuing to cause a significant change to visual quality

Other issues were also addressed for these environmental subjects as well as for other topics. The majority of these impacts were mitigated below a level of significance (The County determined vegetation removal and aesthetic effects to be significant). The No Action Alternative would not increase or otherwise alter any of these previously addressed impacts or mitigation measures.

### Plan Comparison to Proposed Action and Applicant Objectives

The No Action Alternative would result in termination of mining at the Castle Mountain Mine as currently permitted by the year 2000, with a total of no more than approximately 890 acres of surface disturbed and reclaimed, compared to 1,380 acres with the Proposed Action. Heap leach facilities could be completed as permitted. The Lesley Ann Pit would remain, with some mineralization in the pit walls. Backfilling of the pit would be incomplete.

The No Action Alternative would not conflict with completion of the Castle Mountain Mine as it was initially permitted. However, use of the established facilities would not be maximized as desired by Viceroy. While the operation and support facilities were constructed for the mine as initially envisioned and permitted, additional recently discovered ore reserves are now proven, and the Applicant desires to continue operation. The No Action Alternative would therefore not meet the Applicant's objectives as described in Section 1.2.2.

#### 2.3.2 South Overburden Site Expansion Alternative

The South Overburden Site Expansion Alternative would encompass the same array of modifications to the existing operation, including an extended period of operations site plan modifications, and modifications to conditions and stipulations (as described in Section 2.2). The difference would be in the placement of overburden.

### Site Plan and Major Components

The South Overburden Site Expansion Alternative would provide for continued operation of the Castle Mountain Mine through development of additional ore reserves and heap leach pad area. Overburden generated would be placed over the existing permitted areas of the South Overburden Site, resulting in a vertical expansion of the topography. A site plan showing the alternative at completion is shown in Figure 2.0-35.

Key development and operating parameters for this alternative would include:

- Tons of Ore Processed:  
71 MT (41 MT)<sup>(1)</sup>
- Tons of Overburden Processed:  
221 MT (161 MT)<sup>(1)</sup>
- Surface Disturbance:  
1,215 acres (325 acres)<sup>(1)</sup>
- Period of Operations:  
20 years (10 years)<sup>(1)</sup>
- Final Reclamation Period:  
10 years (10 years)<sup>(1)</sup>

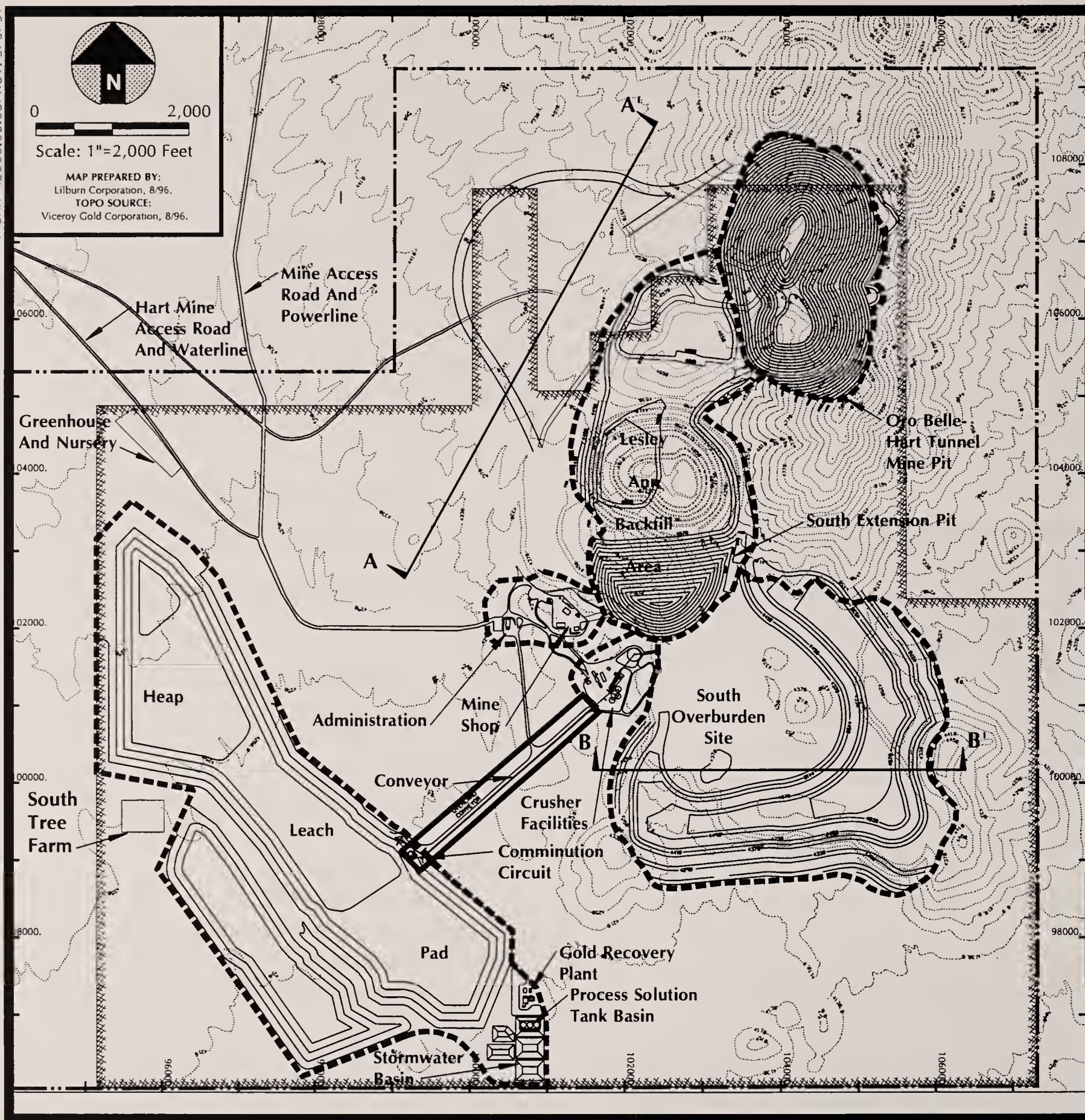
The South Overburden Site Expansion Alternative would extend the life of the mine to approximately 2010, with an additional 10 years for final reclamation (2020). The permitted heap leach pad areas would be combined into an expanded single pad. The Oro Belle Hart Tunnel Pit would be developed as an additional mine pit. Overburden

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<sup>1</sup>Total for Mine (Total for Amendment).

NOTE: Overlap would occur between existing permitted mining and amended operations.





## Legend

- Existing Topography
- Permitted Access and Haul Roads
- Other Roads
- Original Mine Site Boundary

- Amended Mine Site Boundary
- Proposed Contours
- Major Facilities
- Cross Section Location ( See Figure 2.0-36 for Cross Sections)

Note: This plan is conceptual only. Actual facilities would be determined by geology results during mining operations.

## South Overburden Site Expansion Alternative

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Figure 2.0-35



produced in the early stage would be trucked to the South Overburden Site, and placed in a crescent-shaped areas surrounding low-grade ore stockpiles. Overburden produced in the latter stages would be placed in the Lesley Ann and Jumbo pits.

Cross sections of the vertical expansion of the South Overburden Site are shown in Figure 2.0-36. The South Overburden Site Expansion Alternative Reclamation Plan is shown in Figure 2.0-37.

### Facilities and Operations

Facilities and methods of operation for the South Overburden Site Expansion Alternative would be the same as for the Proposed Action. Mining and processing methods established in the approved permits would not change. Support facilities, including crushing, conveying, comminution circuit, process plant, storage tanks and basins, contractors shop, administration building, greenhouse and tree farm, utilities, and access roads are in place and would not be modified.

### Key Environmental Issues

The South Overburden Site Expansion Alternative would result in an extended period of operation, site plan modifications and modifications to conditions and stipulations, as described in Section 2.2 for the Proposed Action. The potential environmental impacts are therefore similar to the issues of concern for the Proposed Action (refer to Section 1.1.3), including:

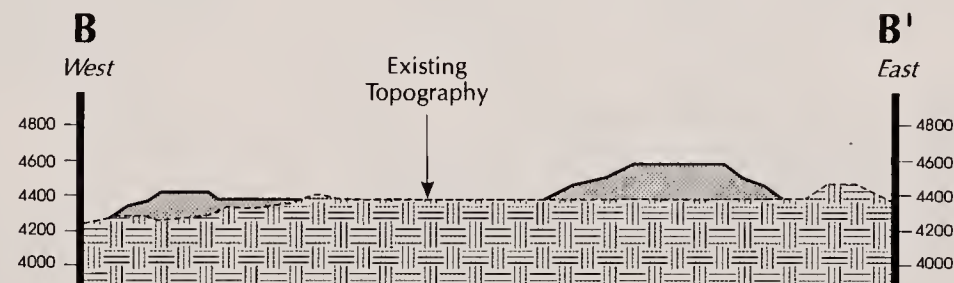
- **Geology:** Mine pit wall stability, overburden stockpile stability.

- **Water Resources:** Extended mine life and water use effects on Lanfair Valley aquifer, monitoring of Piute Spring, groundwater protection from mine process activities, consequences of water seepage into the mine pit.
- **Vegetation:** Impact to vegetation as a result of expanded area and extended period of operation, impact to sensitive species.
- **Wildlife:** Impact to wildlife and habitat as a result of expanded area and extended period of operation, impact to sensitive species as a result of expanded area and extended period of operation.
- **Air Quality:** Fugitive dust (PM<sub>10</sub>) from new mining areas and longer haul roads.
- **Visual Resources:** Changes to views as a result of mine expansion and extended period of operation. This alternative would raise the height of overburden from 180 feet to 420 feet.
- **Cultural Resources:** Impacts to pre-historic resources, impacts to historic resources of the Hart townsite. This alternative would largely avoid the historic resources.
- **Land Use:** Impact of extended period of operation on other surrounding uses, relationship to Mojave National Preserve.
- **Hazards:** Potential effects of continued use of reagents for extended period of operation.





**Cross Section A-A'**  
(No change to existing topography  
with this alternative)



**Cross Section B-B'**  
(Alternative Overburden Stacking)

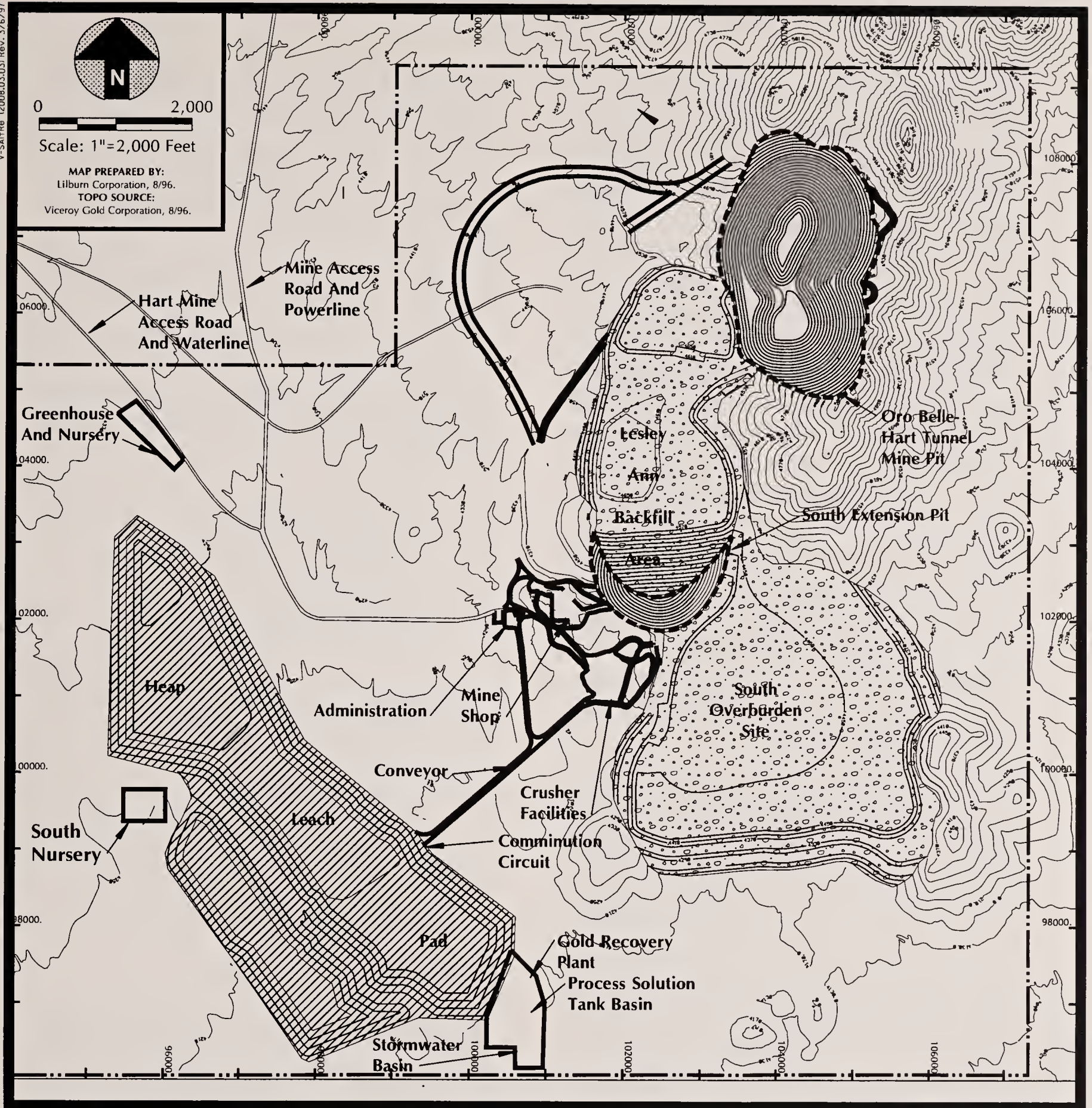
**Note:**  
See Figure 2.0-35 for Cross Section locations

## South Overburden Expansion Alternative Cross Sections

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0 1,500 3,000  
Horizontal Scale: 1"=1,500 Feet  
Vertical Scale: 1"=1,500 Feet





## Legend

- Existing Topography
- Disturbed Area Final Contours
- Amended Mine Site Boundary

## Generalized Reclamation Summary

Mine Use	Surface Type	Reclamation Treatment
Mining.....	Rock walls, benches and floor, broken rock where backfilled	Rip floors and haul roads, place growth media, revegetate pit floors and haul roads
Overburden.....	Broken Rock.....	Scarify Haul roads. Grade faces to scallop surface. Place growth media, revegetate.
Heaps.....	Crushed and processed ore	Wash heaps. Regrade slopes to 2.5:1. Place growth media.
Buildings, ..... Growth Media Storage, Roads, Other	Stockpiles, ..... compacted earth	Remove/Relocate growth media. Scarify compacted surfaces. Place growth media, revegetate.

## South Overburden Site Expansion Alternative Reclamation Plan

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Figure 2.0-37



### Plan Comparison to Proposed Action and Applicant Objectives

The South Overburden Site Expansion Alternative would result in extended operations and mine design changes. Similar to the Proposed Action, the Oro Belle-Hart Tunnel Pit would be created, the Lesley Ann South Extension would be mined, and the three permitted heap leach pads would be consolidated into one location. As compared to the Proposed Action, overburden would be hauled over distances almost twice as long to the existing South Overburden Site. Additional overburden would increase the height, thereby increasing the overburden height above the surrounding hills resulting in an aesthetic feature that could be distinct from the adjacent Castle Mountains. However, the additional surface disturbances at the Proposed Action North Overburden Site would be largely avoided; impacts to the Hart townsite would be avoided.

The County has indicated that should this alternative be selected, a mitigation measure would be imposed to re-distribute the crescent-shaped overburden pile over the entire South Overburden Site at the conclusion of mining. This would lower the elevation approximately 128 feet (still 300 feet higher than the permitted South Overburden Site).

While the South Overburden Site Expansion Alternative would meet the Applicant's basic objectives for the project (refer to Section 1.2.2), the Applicant has indicated mining operations would be less efficient and substantially more costly. It would be necessary to haul overburden at distances approximately twice as long as under the Proposed Action, resulting in greater costs. The longer haul distances would mean that lower grade portions of the mine pits,

including the Lesley Ann South Extension, may not be profitable and might not be mined under foreseeable gold prices. Further, imposition of the visual resource mitigation measure to re-distribute overburden at the conclusion of mining, as shown in Figure 2.0-37, would cost over \$18 million (based on 17 million tons of overburden, at a cost to load and haul of \$1.05 per ton). This would further reduce the economic viability of the project. The Applicant therefore desires the site plan modifications as specified for the Proposed Action.

### 2.4 ALTERNATIVES ELIMINATED FROM DETAILED CONSIDERATION

A broad range of alternatives were evaluated in the Previous EIS/EIR including:

- No Action Alternatives
  - Site withdrawal or condemnation
  - Alternative methods of acquiring gold
- Alternative Project Locations
- Alternative Project Sizes
- Alternative Project Ore Processing Rates
- Ivanpah Access Alternative
- Alternative Mining and Processing Technologies
  - Alternative Mining Techniques
  - Alternative Overburden and Processed Ore Disposal
  - Alternative Gold Extraction Techniques



- Alternative Locations for Project Facilities
  - Mine Pits
  - Overburden Piles
  - Heap Leach Pads
  - Process Facilities and Solutions Ponds
- Alternative Water Supply
- Alternative Power Supply

Some of these alternatives (such as Alternate Water Supply, Alternative Mining and Processing Technologies, and Alternative Project Locations) were determined to be technically or environmentally inappropriate, or would not meet the basic objectives of the project. Others (such as alternative project sizes, processing rates) were considered in more detail, but were found to have little or no environmental advantage.

Two alternatives were incorporated into the final project as mitigation measures: (1) an access route alternative that avoided high-density desert tortoise habitat was developed, and (2) alternative power supply (electrical power extension instead of onsite diesel generators) was developed.

The above alternatives not already incorporated into the existing project were reviewed with respect to the currently proposed mine plan amendments, and are summarized in the following sections in terms of their applicability.

### 2.4.1 Alternative Technologies and Facilities

#### Alternative Project Locations

Alternative project locations are commonly discussed in environmental evaluations for purposes of comparing the environmental

impacts of a project at that location, compared to development of that same project elsewhere. The important issue is whether a significant effect on an environmental resource could be avoided by developing the project elsewhere. However, one key aspect sets mining projects apart from other industrial projects: the element of discovery of a valuable mineral deposit at a particular site invariably dictates a mining project's location. For this reason, the CEQA Guidelines as amended in 1995, now recognizes that alternative site evaluations may not be appropriate for mining projects.

" . . . In some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location."  
§15126(5)(B)2

The Proposed Action was designed for mining and processing of the identified Castle Mountains ore deposits. Therefore, an alternative site location was not physically possible and could not achieve the basic project objectives.

In considering this alternative in the Previous EIS/EIR, it was also recognized there would be little if any change in environmental impact from the relocation of the project to another site, even if it were possible.

#### Alternative Project Sizes

Changing the size of a project can sometimes reduce the effects of an environmental impact. The changes in environmental effects by enlarging the project are sometimes worthwhile to examine as a comparison. Both were examined in detail in the Previous EIS/EIR.



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

### *Changes in Project Sizes*

It was determined in the Previous EIS/EIR that a reduced project offered some limited environmental advantages, as it would involve less land, reduced traffic, water, power and other fuel resources, and reduced visual impacts. While such a project would reduce such effects, the overall significance of the effects, as compared to the Proposed Action, would not substantially change; no significant impact would be avoided by such a reduced project.

It was also determined that a larger mine would not offer an environmental advantage. However, an enlarged project would also not substantially increase the environmental effects above a level of significance. The proposed pit dimensions were based on economic parameters and known characteristics of the orebody at that time, and an enlarged project was not considered feasible.

Consideration of a reduced or enlarged project alternative instead of the Proposed Action would achieve similar results. Effects to vegetation, wildlife habitat, and other environmental resources would be incrementally changed, but not substantially enough to warrant an alternative size.

### **Alternative Processing Rates**

Alternative processing rates were evaluated in detail in the Previous EIS/EIR to determine if environmental impacts could be substantially lessened.

It was determined in the Previous EIS/EIR that a slower processing rate for the same overall quantity of ore would result in an increase in the life of the mine from an estimated 10 years for the Castle Mountain

Mine to approximately 20 years for the slower project. This alternative would result in a reduction of project personnel. Daily and total power requirements also would decrease. Water requirements would increase, however, due to the longer-term need for dust control and make-up water. Effects related to the area disturbed would be the same as for the Castle Mountain Mine as was originally proposed. Overall, it was determined that the slower processing rate offered no substantial environmental advantage.

A faster ore processing rate of the same amount of ore as the proposed project would have resulted in a decrease in the Castle Mountain Mine life from 10 to approximately 7 years. Water requirements would decrease overall due to a reduced period for dust control and evaporation. Daily power requirements would increase.

This analysis equally applies to the Proposed Action; there appears to be no substantial environmental advantage for an altered processing rate.

### **No Action**

Consideration of the No Action Alternative is required by NEPA and CEQA. It provides a comparison of the environmental impacts of a project with the existing and future conditions if no project were approved. The No Action alternative is considered throughout this EIS/EIR.

It was acknowledged in the Previous EIS/EIR that such action would be inconsistent with federal and state policy encouraging mineral development and would deny the claimant its legal right to extract minerals on its claim. However, this alternative could be accepted by BLM if it were determined that the mine



would result in "unnecessary or undue degradation" of federal lands as specified in BLM's 3809 regulations. The County has no such limitation on its decision-making.

Opponents to the initial mine development expressed a preference for the No Action alternative, including project denial, site condemnation, and assertions that gold could be acquired by other methods, and its production is not a needed use of public lands. These issues were addressed in the Previous EIS/EIR as part of No Action considerations. Such considerations were generally not related to the environmental analysis completed in compliance with CEQA and NEPA. These considerations are summarized in the following:

- **Project Denial:** Project denial would be inconsistent with public policy encouraging mineral development unless it were determined that a proposed action would result in unnecessary and undue degradation of federal lands. Under the Mining Law of 1872, a person who discovers valuable mineral deposits on open federal lands has the right to extract and sell those minerals. The site is located within a portion of the California Desert Conservation Area (CDCA), wherein mineral development is supported as an extension of long-standing activity that has helped to define the character of the area.

These conditions are similarly applicable to the Proposed Action.

- **Site Withdrawal or Condemnation:** Withdrawal of project land by BLM to prevent ongoing development of its mineral resources is not permitted under

federal law. Under the Mining Law of 1872, the BLM has no discretionary authority to prohibit mining on public lands. Further, the Federal Land Policy Development Act (FLPMA) includes mineral development as an effective use of lands administered by the BLM. The CDCA Plan permits mining on Class L lands, within which the Castle Mountain Mine is located.

A condemnation alternative not considered in the Previous EIS/EIR is government buy-out of the Applicant's mine property and claims. Since that time, the government has engaged in the purchase of certain properties to avoid development. On August 12, 1996, President Clinton announced an agreement to halt development of the New World Mine (Butte, Montana) by exchange of federal property valued at \$65 million in exchange for property in the New World Mining District. Similar land deals have been proposed elsewhere, including the Mojave Desert, where Catellus Development Corporation has been negotiating with the Department of the Interior to sell its Mojave land holdings for \$36 million. That deal is reportedly stalled due to a lack of government funds.

Withdrawal, condemnation or purchase of the Viceroy holdings appears unlikely as an alternative, as such activities appear to be conducted elsewhere *prior to* project development; the existence of the Castle Mountain Mine would appear to preclude or severely discourage such options. Moreover, such activities would presumably be completed for properties that exhibit substantial environmental values with such government investment;



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

no such values have been identified for the Castle Mountain Mine site.

Based on these considerations, this alternative is similarly considered infeasible for the Proposed Action.

- **Alternative Methods of Acquiring Gold:** Other than development of the resource from the ground, alternative methods of providing gold include, but are not limited to, purchase from stockpiles or governments in other countries, recycling of gold scrap and curtailing non-military uses. Implementation of such alternatives would involve a significant alteration of U.S. policy, which favors use of a free-market system for meeting the demand for gold. Potential new policies could involve rationing, devising a system to allocate gold to selected uses and users, punitive taxes on domestic gold transactions to discourage sales, and pricing mechanisms to encourage industrial development and use of substitutes.

Because such activities would involve significant change in federal philosophy, policy and systems, they are not considered feasible. New mining remains the preferred method of increasing the supply of gold.

### **Alternative Mining and Processing Technologies**

Alternative mining techniques include strip mining and underground mining. Strip mining is a linear mining method applicable mostly to shallow, linear resources such as coal; this method would not be possible for the deep deposits at the Castle Mountain Mine. Underground methods were

determined generally inappropriate for the Castle Mountain Mine low-grade disseminated ore bodies; however, limited underground mining could be accomplished for higher grade ore as is planned as part of the Proposed Action.

Alternative gold extraction methods could include flotation, carbon-in-pulp leaching, vat leaching and in situ leaching. These methods were determined inappropriate under the present circumstances because they are applicable to ore with characteristics that are different from those of the Castle Mountain orebodies.

These alternatives are similarly inappropriate for the Proposed Action.

### **Alternative Locations for Project Facilities**

Alternative locations of project facilities were considered in the Previous EIS/EIR for mine pits, overburden sites, heap leach pads and process facilities, and solution storage facilities. For the reasons described below, alternative locations for project facilities were determined to not be feasible.

The mine pits are created as a result of mining the orebody, the location of which cannot be altered. Therefore, there are no geographic location options for the mine pits.

The locations for overburden disposal were determined based on various operational criteria: (1) minimization of truck haul distance, (2) sufficient disposal capacity, (3) requirements to control upstream and downstream drainage, (4) avoidance of sensitive environmental resources, and (5) absence of potential economic mineral reserves underlying the overburden area. The



locations chosen in response to these criteria also were designed to minimize total land area disturbed, maximize operational efficiency and minimize visual impacts. Possible alternative locations would be offsite or elsewhere onsite. Offsite disposal was undesirable because it would involve a comparable area of land and offsite use of large haul trucks with corresponding increases in transportation costs, fuel consumption and pollutant emissions. Other onsite locations would be sub-optimal, as such considerations were rejected as part of the original siting process.

Heap leach pads were located after consideration of operational and environmental factors: proximity to mine areas, efficiency of construction and operation, minimizing land use, and avoidance of natural drainages and cultural resources. The areas designated for the heap leach pads were located on terrain that is well above the depth of potential flood waters and in terrain with sufficient slope to promote solution drainage. Relocation of the pad area would involve location either in more steeply sloping terrain and interfere with the principal drainage channel and known cultural and historical resources or in an area a greater distance from the mine site and contribute to higher costs and operational inefficiencies.

Considerations for co-location of process facilities and solution storage included minimizing solution pumping distances and costs, maximizing security and avoiding areas with known cultural resources. It was determined that relocation of these facilities would not accomplish the same goals.

### ***Mine Pit Backfilling***

Mine pit backfilling was evaluated in detail in the Previous EIS/EIR, due to the desire of

environmental groups for this activity to be completed. It was explained that backfilling could not eliminate the need for overburden sites, and that, unless it could be sequentially completed with mining, backfilling would not be economically feasible. In addition, backfilling was not proposed because mineralization would remain in the mine pit walls that could feasibly be mined with potentially foreseeable increases in the price of gold.

As described in the Previous EIS/EIR, once an open pit has been mined, it is generally not possible to replace all the material excavated from the pit, or to restore the land surface to its former condition, due to physical constraints. Broken rock occupies a much greater volume than solid rock. As a result of this expansion or "swell factor," all of the rock that has been broken and removed from a pit during mining will not fit back into the pit. Analysis of rock volumes and expected expansion factors for the Castle Mountain Mine were examined in the Previous EIS/EIR. The total volume of the mine rock was at 61.2 million cubic yards, or 36 percent greater than its volume prior to excavation. This means that replacement of the mined rock back into the pits was not physically possible.

Even if backfilling were to be accomplished (to the degree physically possible), the costs would be prohibitive. As documented in the Previous EIS/EIR,

"In almost all cases, the cost of backfilling an open pit is prohibitive. The exception to that rule may occur when two or more orebodies can be mined sequentially with overburden from one excavation used to backfill the other; a situation structurally similar to the current practice in some surface coal mines.



## 2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The single most significant aspect of backfilling open pits is cost. For a typical open pit operation, loading and hauling of material is the largest mining cost component (excluding mineral processing). Backfilling essentially doubles the cost of loading and hauling. This could make an otherwise profitable mine uneconomic to develop and operate."

At that time, the Applicant estimated that pit backfilling would cost in excess of \$41 million, which would make the project uneconomic.

The environmental effects of backfilling were also addressed in the Previous EIS/EIR. Maximum pit backfilling (completed following mine operation) was determined to increase impacts to water resources and air quality. Other effects would be similar to the Castle Mountain Mine as proposed. Visual Resource Management impacts would not substantially change.

### ***Sequential Pit Backfilling***

Backfilling activities that could be sequentially accomplished (thereby avoiding the cost of double-handling, and at locations that would not restrict access to remaining mineralization) were incorporated into the initial Castle Mountain Mine. The north and south clay quarries were incorporated into the project as reclamation areas for backfilling. The primary objective was to reduce the visual contrasts of these sites, which were mined prior to SMARA, and not reclaimed to current standards. Sequential backfilling over these sites has been accomplished as part of the Castle Mountain Mine.

For the Proposed Action, sequential backfilling has been planned as an activity for the later stages of project development once pit mineralization has been exhausted.

### **Alternative Water Supply**

Potential alternative sources of water were considered and included pipeline delivery of water from the Colorado River at Lake Mojave, groundwater from Ivanpah Valley or Piute Valley, and via truck from an undetermined source. These alternatives were determined to offer no environmental advantage over water obtained from the proposed West Well Field.

Development of a water supply from the Colorado River would include construction of a 43-mile pipeline able to withstand an elevation change of nearly 4,000 feet. The project also would involve interstate transfer of water and disturbance of approximately 62 acres of land along the right-of-way.

Sufficient water supply was available from Ivanpah Valley, but development of this source would require construction of a well field and installation of a 14-mile pipeline and pumps to lift the water approximately 2,000 feet in elevation. The quality of Ivanpah Valley water could have required a treatment plant to condition the water prior to use in the leaching process. Development of a water supply in Piute Valley would result in similar effects.

The use of trucks to transport water to the site would involve approximately 110-truck loads per day, based upon a 6,000-gallon capacity. The increase in traffic would be approximately three times that of the Castle Mountain Mine, with associated increases in air emissions, and dust.

The Previous EIS/EIR detailed analysis of the Lanfair Valley aquifer and Piute Spring determined that the mine would not pose a threat to water flow at the spring.



Development of an alternative for water supply was therefore unnecessary. Mine water use, and monitoring of the aquifer and Piute Spring, have verified these conclusions. Development of an alternative water supply would similarly not be expected to be an environmental advantage for the Proposed Action.

### **Alternative Power Supply**

Alternative sources of utility power were evaluated in the Previous EIS/EIR to reduce air emissions.

The Nevada Power Company was determined to have covenants that restrict its ability to extend service to customers outside of its service area. Because the Castle Mountain Mine is located in California outside of the service area, this alternative was determined not to be feasible.

Obtaining power from Southern California Edison would have required construction of a transmission line from Cima to the project site, a distance of approximately 30 miles. It was determined that such construction would be difficult based on the necessity to negotiate with numerous private land owners in Lanfair Valley for construction rights-of-way and capital costs. Additionally, potential delays in negotiating permits and rights-of-way agreements would prohibit availability of power concurrent with project start-up. Although use of the power line would reduce project air emissions, it also would result in an additional visual impact. Therefore, it was determined that there would be no overall environmental advantage to this alternative.

Subsequent to approval of the Castle Mountain Mine, Nevada Power Company investigated and reconsidered its ability to

provide service. Negotiations were completed between service providers, and Nevada Power Company was allowed to provide service. An Environmental Assessment was completed to extend a 69kV power transmission line from Searchlight, along the mine access road to the site, and this alternative was adopted as part of initial mine development.







**CHAPTER 3.0**  
**AFFECTED ENVIRONMENT AND**  
**ENVIRONMENTAL CONSEQUENCES**

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**SECTION 3.1**  
**INTRODUCTION**

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## 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

### 3.1 INTRODUCTION

This chapter presents individual sections for each environmental resource issue; each section includes: a description of the existing conditions in the vicinity and at the Castle Mountain Mine site; an evaluation of the impacts that could occur from the Proposed Action and its alternatives, measures that would mitigate the effects, and any remaining residual effects following mitigation.

The Previous EIS/EIR also evaluated the impacts to the same environmental resources evaluated in this chapter. Extensive research, evaluation and documentation was completed for the Previous EIS/EIR. Nearly all that data and analysis are relevant to the current project. To minimize redundancy, and to focus the current analysis on the specific impacts associated with the proposed action, this EIS/EIR summarizes but does not repeat all of the extensive environmental data, or reevaluate issues resolved in the previous evaluations. Information presented is as complete as is necessary for an independent evaluation of the Proposed Action. If additional background on the existing environment, the impact analysis, or rationale for mitigations developed is desired, the reader is referred to the Previous EIS/EIR and associated documents. The previous documents incorporated by reference, and the locations where they can be reviewed, are listed in Section 1.1.3 of this EIS/EIR.

For the Previous EIS/EIR, a degree of forecasting was necessary in determining the

impacts that *could occur* as a result of development and operation of a new mine. Further, forecasting (although based on experience at other sites) was necessary in the development of mitigation measures and the expectations for their effectiveness. That degree of forecasting is not necessary for this EIS/EIR, although some degree of predicting future conditions is still incorporated into this assessment. The Castle Mountain Mine was constructed in 1991, and has nearly 6 years of operating history. The impacts associated with construction and operation at this site have been established by experience. Many mitigation measures have been implemented, monitored in compliance with CEQA and BLM requirements, and their effectiveness documented. The evaluations herein therefore incorporate this experience.

Where current data is provided from a new reference, the reference is cited. The Previous EIS/EIR is incorporated by reference; where data and information is summarized, individual citations are not made.

#### 3.1.1 Regional Environment Overview

Lanfair Valley lies in the eastern Mojave Desert of California. This portion of the eastern Mojave is geographically located in the south-central portion of the Mojave Desert that extends over portions of California, Nevada, and Arizona. Lanfair Valley is typical of East Mojave valleys with alluvial flatlands surrounded by sloping bajadas and mountains. The Valley is elevated above the



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

surrounding Ivanpah, Piute, and Fenner Valleys and, therefore, receives greater rainfall. Precipitation in the New York Mountains, which form the northwestern boundary of the Valley, exceeds 10 inches. The valley floor, in the vicinity of the mine, receives approximately 8 inches of precipitation. Elevations range from approximately 3,200 feet at the southeastern limits of the Valley to over 7,500 feet in the New York Mountains.

Vegetation and wildlife species in this region are generally wide-ranging, and are commonly found throughout the Mojave Desert. Representative plant communities include pinyon juniper woodland at upper elevations, blackbush scrub on mountain slopes above approximately 4,000 feet, and Joshua tree woodland and creosote bush scrub below. Species of rare occurrence or restricted range may also be found in certain locales, indicative of localized climatic and soil conditions. An understory of desert grassland is recognized as an unusual plant assemblage (UPA) by the BLM and occurs throughout the floor of Lanfair Valley. Wildlife typical of Lanfair Valley include reptiles such as lizards and snakes, various resident and migratory birds, and mammals, including coyote, jackrabbit, desert woodrat, and mice. Species of special interest include raptors such as the golden eagle, prairie falcon, and Swainson's hawk. Desert bighorn sheep occur in mountains surrounding the Valley. The desert tortoise occurs in very limited numbers in Lanfair Valley; large populations are known in the lower elevations of Ivanpah and Piute Valleys.

Land use in Lanfair Valley has historically been linked to mining and grazing activities. Mining has occurred at locations throughout

the Valley, but the greatest past and present activities are related to the Hart Mining District of the Castle Mountains, where gold and fine kaolin clay are found. The Valley has the highest concentration of private lands in the East Mojave Desert, a legacy of agricultural settlement early in this century. Cattle graze Lanfair Valley and adjacent areas on BLM or NPS grazing allotments. The newly formed Mojave National Preserve extends over this region of the Mojave Desert, including Lanfair Valley. Recreational uses are generally passive, such as sightseeing along the Mojave Road or the East Mojave Heritage Trail. These roads cross Lanfair Valley and are part of a network of dirt trails that have historically traversed the eastern Mojave Desert.

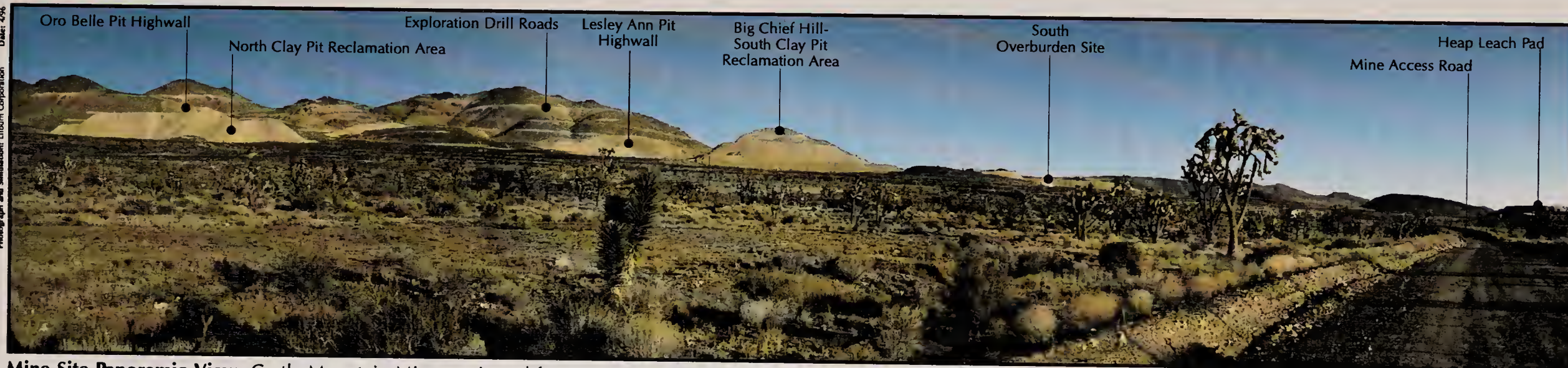
Access into and throughout Lanfair Valley is generally provided by improved and unimproved dirt roads from the west (via Cima), northwest (via Ivanpah), northeast (via Searchlight and the Mine Access Road), and south (via Goffs).

#### 3.1.2 Project Site Overview

The Castle Mountain Mine study area lies in northern Lanfair Valley at the southern limits of the Castle Mountains. Views surrounding the site are shown in Figure 3.1-1. The mine site is characterized by slopes and canyons occurring at higher elevations and gently sloping to nearly flat alluvial terrain at lower elevations. Elevations on the site range from approximately 4,100 to 5,100 feet.

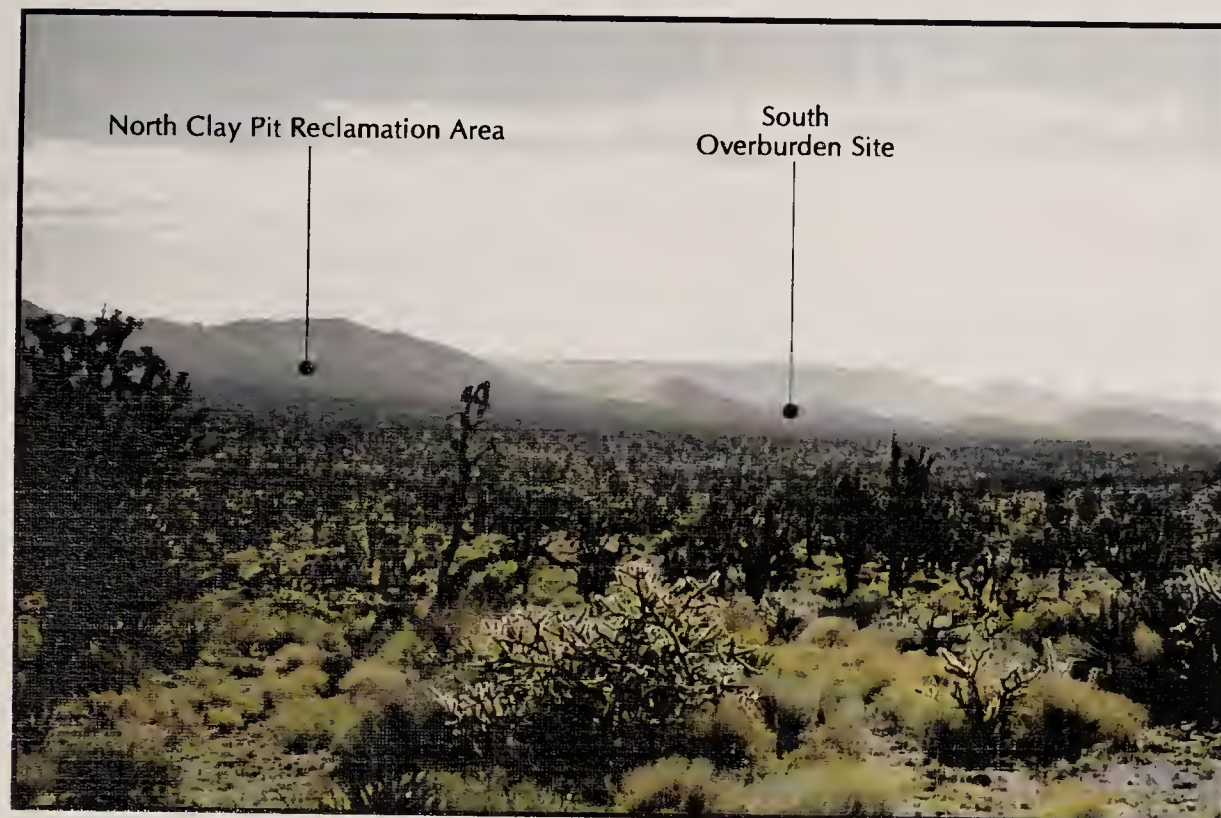
Vegetation communities are represented by the blackbush scrub at higher elevations, and by Joshua tree woodland and creosote bush scrub on lower slopes. A portion of the Valley's desert grassland assemblage also



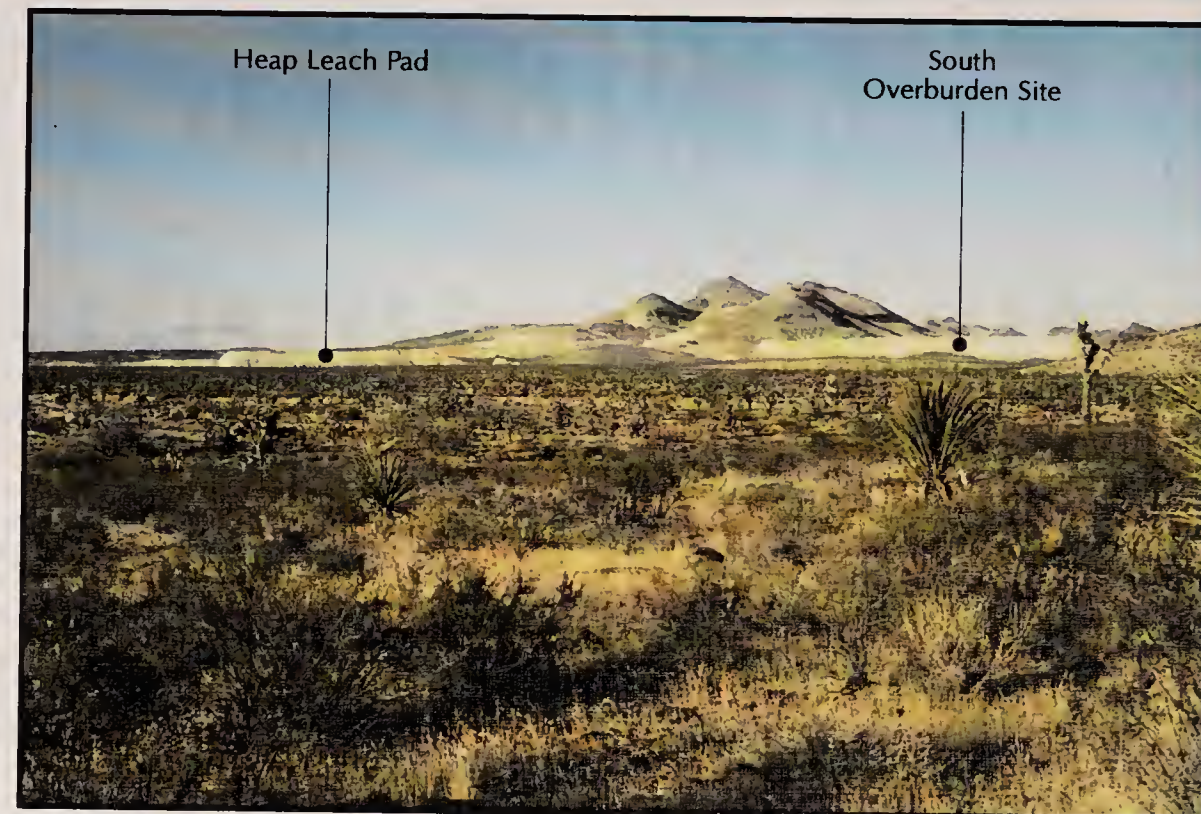


**Mine Site Panoramic View:** Castle Mountain Mine as viewed from mine access road adjacent to the site. View east-southeast.

3.1-3



Northeastern Lanfair Valley and Castle Mountain Mine. Castle Mountains at left. Piute Range at distance (centered and right) View southeast.



Eastern Lanfair Valley immediately south of Castle Mountain Mine. Heap Leach Pad at left; South Overburden Site at right. View north.

## Existing Conditions



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

occurs at lower elevations on the site. Wildlife observed or expected to occur on the site are typical of Lanfair Valley and in the surrounding region.

Land use in the project area has been and continues to be dominated by mining in the Hart Mining District and by grazing of the desert grassland. In the early 1900s, there was a short-lived gold rush to the area, leading to the establishment of the Hart Mining District and the Hart townsite. Once the high-grade ores containing visible gold had been extracted, most of the diggings were abandoned, as was the town. Interest in gold mining was renewed for brief periods in the 1930s and 1940s. In the 1920s, quarrying operations began on clay deposits in two areas immediately west of the gold mines. Past activities are evidenced by limited remains of mine workings, shafts, and roads. The Castle Mountain Mine was constructed in 1991, and has incrementally developed over the past 6 years. The operation employs approximately 200 people, all of whom reside offsite. Castle Mountain Mine is the third largest producing gold mine in California. An aerial photograph of the operation is shown in Figure 1.0-1.

#### 3.1.3 Format of Issues Analysis

Each topic section in this Chapter generally has five parts:

- **Introduction**
- **Affected Environment**
- **Environmental Consequences and Mitigation Measures**
- **Cumulative Impacts and Mitigation Measures**
- **Residual Adverse Effects**

A discussion of the Affected Environment ("Environmental Setting" in CEQA) and of Environmental Consequences and Mitigation Measures ("Impacts and Mitigation Measures" in CEQA) is required for both an EIR and an EIS. The discussion of Residual Adverse Effects is required only by NEPA, and consists of a discussion of any residual effects following implementation of mitigation measures, regardless of the significance of the residual effects. CEQA requires an identification of significant unavoidable impacts, that is, those impacts for which mitigation to a less than significant level is not feasible. CEQA does not require a discussion of remaining impacts once the level of significance has been reduced through mitigation to a level of less than significant.

The **Introduction** describes the purpose of the section, and identifies the main issue of the analysis.

The **Affected Environment** section summarizes from the Previous EIS/EIR the existing conditions at the regional, sub-regional and local level, and plans, policies and regulations, as applicable. Where appropriate, additional supplementing or current environmental information relevant to the Proposed Action is provided.

The **Environmental Consequences and Mitigation Measures** focuses on project-specific impacts. Standards for determining project-level impact significance are identified. Project-specific mitigation measures and potential impact significance after implementation of the mitigation measures are identified.

In the impact analysis, each environmental topic (such as revegetation) is divided into



subsections addressing specific effects that could occur. The standard format used to present the evaluation of impacts for each of the alternatives is as follows:

### Impact 3.2-1: Impact Issue

This is a concise title of the impact being considered.

**Proposed Action:** *A general statement of the impact expected is provided.*

Explanatory text describes the analysis completed, and the type and degree of impacts expected.

**Mitigation Measures:** Project-specific mitigation is identified that would reduce the impact to the degree possible. In many cases, the measure is cited from existing County Conditions of Approval and BLM Stipulations.

Explanatory text is included, as necessary, to describe how the mitigation measure has been or would be implemented, or how effective it has been or is expected to be.

**Level of Significance After Mitigation:** A conclusion statement is made identifying the level of significance following mitigation.

### Determination of Significance

For each area of analysis, a series of criteria are presented for determination of significance. These criteria present thresholds or other methods for determining whether a particular environmental impact is considered to be significant. The analysis in each section presents a determination of whether, following mitigation, each impact is significant, based on the criteria stated in that section. Some

impacts are less than significant for the project as proposed, and mitigation is not required. This meets the requirements of the *BLM NEPA Handbook* for a description of "assumptions and assessment guidelines."

Three categories of impacts are used for the impacts within this report: *less than significant*, *significant*, and *significant and unavoidable*. Each impact and mitigation measure(s) is numbered consecutively for individual sections of the document:

- **Less than Significant:** The impact would cause no substantial change in the existing or projected future environment, therefore no mitigation is required. Or, while there may be some associated impact, it is insignificant or acceptable as defined by the applicable thresholds of significance.
- **Significant:** Under CEQA, a significant impact is defined as a substantial, or potentially substantial, adverse change in the environment (CEQA §21068). CEQA Guidelines state that this determination is made by the decision-making body, and is based on scientific and factual data, to the extent possible. In evaluating the significance of an impact, the lead agency must consider direct and indirect consequences. The determination that an impact is significant is based on the criteria stated in this document.

Under NEPA, factors to consider in determining significance are set forth in 40 CFR 1508.27. Significance is determined by comparing the impact to some parameter or maximum/minimum level of effect beyond which the impacts become significant, i.e., significance threshold (BLM, 1988).

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

“Significantly” as used in NEPA requires considerations of both context and intensity:

- (a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.
- (b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:
  - (1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
  - (2) The degree to which the proposed action affects public health or safety.
  - (3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
  - (4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.
  - (5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
  - (6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

- (7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
- (8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
- (9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
- (10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

- **Significant and Unavoidable:** An impact is considered to be significant and unavoidable when it results in a substantial effect on the environment for which no mitigation has been identified as feasible to reduce the impact to a less than significant level. In some cases, mitigation is proposed to reduce the impact as far as is feasible, although mitigation to reduce the impact to a less than significant level is not feasible.

#### 3.1.4 Other Existing and Future Activities in the Vicinity

Cumulative impacts are the combined impacts associated with past, present, and reasonably



foreseeable future activities in the mine site vicinity. Cumulative impacts are defined under federal and state regulations. NEPA §1508.7 defines cumulative impacts as:

"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7).

CEQA also defines cumulative impacts and provides guidelines for inclusion in EIRs. Section 15355 of the CEQA Guidelines defines cumulative impacts as:

"Two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

- (A) The individual effects may be changes resulting from a single project or a number of separate projects.
- (B) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time" (14 CCR 15355).

Cumulative impacts were analyzed by evaluating past, present, and reasonably foreseeable future activities that occur in the region, and their potential to create a cumulative effect in combination with the Proposed Action. In addition, the Proposed Action was compared with previous disturbance on the mine site associated with the current mining operations to identify the

incremental cumulative effect when considered with the previous disturbance created by the original project.

The region considered in assessing cumulative impacts to the various environmental resources is the Lanfair Valley and portions of Ivanpah and Piute Valleys in the vicinity of the mine access road. The specific resources of concern which have the potential to be cumulatively impacted by the Proposed Action are: water resources, vegetation, wildlife, air quality, visual resources, and land use. Cumulative impacts for each specific environmental resource are described in the respective cumulative impact sections in Chapter 3.

### Description of Other Activities

Other activities that could occur in the reasonably foreseeable future are those that are either permitted or "on file" with any of the following agencies:

- San Bernardino County Planning Department (California);
- Clark County Planning Department (Nevada);
- BLM, Needles Resource Area (federal land in California); or
- BLM, Stateline Resource Area (federal land in Nevada).

The Previous EIS/EIR considered all existing and potential activities and evaluated the extent to which they would cause effects which could be cumulative to those associated with the Castle Mountain Project including residential and commercial, utilities, transportation and other services, recreation and grazing, and mining in a large region of the east Mojave Desert.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Activities recently permitted or currently being considered include the following:

- **Golden Quail Mine:** The Golden Quail Mine is an existing gold mine, located approximately 15 miles southwest of the Castle Mountain Mine. This mine was considered in the Previous EIS/ EIR and is considered a part of the existing conditions for the current analysis.
- **Molycorp Mountain Pass Mine Expansion Project:** The Molycorp Mountain Pass Mine is an existing lanthanide (rare-earth elements) mine on a 348-acre site located approximately 25 miles north-northwest of the Castle Mountain Mine. Mine facilities include a 62-acre open pit; an 82-acre overburden area; loading, haul and access roads; processing and waste disposal facilities; and other support facilities. In addition, Molycorp also uses an existing borrow source, located approximately 7 miles east of Mountain Pass Mine.

Molycorp has proposed to expand mining operations at the site. Approximately 696 additional acres would be disturbed, resulting in a total of 1,044 acres that will have been disturbed and reclaimed at mine buildout in the year 2025. Environmental impacts associated with the proposed mine expansion project are analyzed in the Molycorp Mountain Pass Mine Expansion Project Draft EIR (SCH #92092040).

- **Prima Land Development Golf Course:** Two 18-hole golf courses are currently being constructed on land owned by Prima Land Development located 5 miles west of the California/Nevada border off Yates Well Road, approximately 1 mile north of

the I-15 Freeway (approximately 30 miles from the Castle Mountain Mine). Total acreage of the site is approximately 461 acres. San Bernardino County issued a Negative Declaration for the project.

Based on the limited nature of these activities, and/or the extended distances of these projects from the Castle Mountain Mine, the relative isolation of the mine site, and the lack of other activities in the region, no other activities in the region would be expected to create a significant cumulative impact to an environmental condition in combination with the Proposed Action.

The Proposed Action does have the potential to create cumulative impacts to the environment in combination with the current and future (permitted) activities associated with the existing Castle Mountain Mine. Those potential effects are the focus of the cumulative impact analysis in Chapter 3 of this EIS/EIR.



**SECTION 3.2**  
**GEOLOGY**

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## **3.2 GEOLOGY**

### **3.2.1 Affected Environment**

#### **Introduction**

This section describes the geologic conditions that occur on the mine site and Lanfair Valley region and provides a discussion of the potential geologic impacts and mitigation measures. The information presented in this section is based on the geologic information presented in the Previous EIS/EIR, together with current seismic data.

#### **Physiography and Topography**

The Castle Mountain Mine site is located in the Lanfair Valley in the eastern Mojave Desert, within the Great Basin and Range physiographic province, which is characterized by north-trending mountain ranges separated by broad basins (valleys), often with internal drainage. The mountains consist of uplifted blocks of Precambrian to Tertiary bedrock units and basins are filled with thick accumulations of unconsolidated sediments that were generally derived from erosion of the adjacent bounding mountain ranges.

The mine site is located near the southern flank of the Castle Mountains. Lanfair Valley lies immediately south and west of the site; to the north lie the Castle Mountains; to the west lie the Mid Hills and New York Mountains that attain elevations of 7,500 feet; to the east is the relatively narrow and linear, moderate-relief Piute Range.

#### **Lanfair Valley Regional Geology**

Geologic conditions of the Lanfair Valley and surrounding region can be documented to pre-Cambrian time.

The Castle Mountains and other ranges that bound Lanfair Valley have similar structural origins but are comprised of structurally dissimilar rock. The Castle Mountains, Piute Range, Hackberry, Woods and northern New York Mountains are extrusive Miocene age volcanic rock with lava flows and pyroclastic volcanic ejecta. The Mid Hills and southern New York Mountains have a Cretaceous age intrusive granitic core. In addition, portions of the northern New York Mountains and Vontrigger Hills also consist of ancient metamorphosed pre-Cambrian terrain. A wide band of early Paleozoic sedimentary units has been faulted into place near the east-central portion of the New York Mountains.

Bedrock underlying the alluvium of Lanfair Valley lies at estimated depths of a few feet to over 1,000 feet. A strong trend of aligned bedrock exposures between the Castle and Hackberry Mountains suggests a buried shallow ridge that may divide the underlying basin into two parts.

Recent alluvium has filled Lanfair Valley. Exposed in southeastern Lanfair Valley and adjacent to the Piute Range is a thick section of clay-rich Pleistocene age lacustrine (lake) deposits that range from 550 to 1,000-feet thick and may underlie at least one-half of Lanfair Valley. Interbedded within the lake deposits are locally exposed, thick sections of Pleistocene lava flows. No evaporite deposits have been identified, indicating that the prehistoric lake was not part of the extensive integrated playa lake system of the Great Basin region.

The stratigraphy on the mine site includes the major rock types previously described for the region above, and in the Previous EIS/EIR.



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The mine site lies in an area of relatively low seismic activity. Only eight events were found to have been recorded in the area over the past 197 years. Two faults with identified displacement during Holocene or Late Quaternary time (referred to as active or potentially active faults) have been identified within 100 kilometers (63 miles) of the mine site.

The two faults are the Pahrump-State Line fault located approximately 18 miles north of the mine site and the Bristol Mountain Fault, located approximately 56 miles southwest of the site. Faults known as basin bounding faults most likely exist within the Lanfair and surrounding valleys, but now are buried beneath Miocene alluvium. A fault of this type may be located within 3 miles of the site. The trend of this potential fault is such that it would not cross through the site. Additional information is provided in the Geology section of the Previous EIS/EIR.

#### Seismicity

Historically, Lanfair Valley lies in a zone of very low seismic activity, typical of most of the eastern Mojave Desert and southwest Clark County, Nevada. Most current seismicity in Southern California exists along known active faults. No earthquake greater than magnitude 4.0 on the Richter Scale has been recorded within 50 miles of the project site since 1900. The largest historic earthquake in the region occurred on April 10, 1947, a magnitude 6.2 event on the Mannix Fault, located approximately 72 miles west from the mine site. Localized reservoir-induced seismicity has occurred near Hoover Dam, approximately 50 miles northeast of the project site. Faults and historical earthquakes are shown in Figure 3.2-1.

#### Design Earthquakes

Potentially active and active faults in the area were evaluated (Espana Geotechnical, 1996) to determine the peak horizontal ground accelerations using the EQFAULT computer program that could occur at the mine site for a maximum credible earthquake (MCE). An MCE is defined as the largest possible magnitude based on the known tectonic framework. As shown in Table 3.2-1, the highest peak horizontal ground acceleration (PHGA) that may be experienced on the site would result from an MCE. The MCE would be 7.0 in magnitude and occur on the Pahrump-Stateline Fault. The PHGA at the site estimated for this event is  $0.10g^1$ . Table 3.2-2 shows earthquake intensity and relative effects.

Another important consideration for mine operations is the maximum probable earthquake (MPE). The MPE is defined as the largest expected earthquake with a 100-year return interval. Table 3.2-1 shows the highest PHGA, resulting from an MPE on the Pahrump - Stateline Fault. The MPE would be 5.75 in magnitude and result in an estimated PHGA of  $0.05g$ .

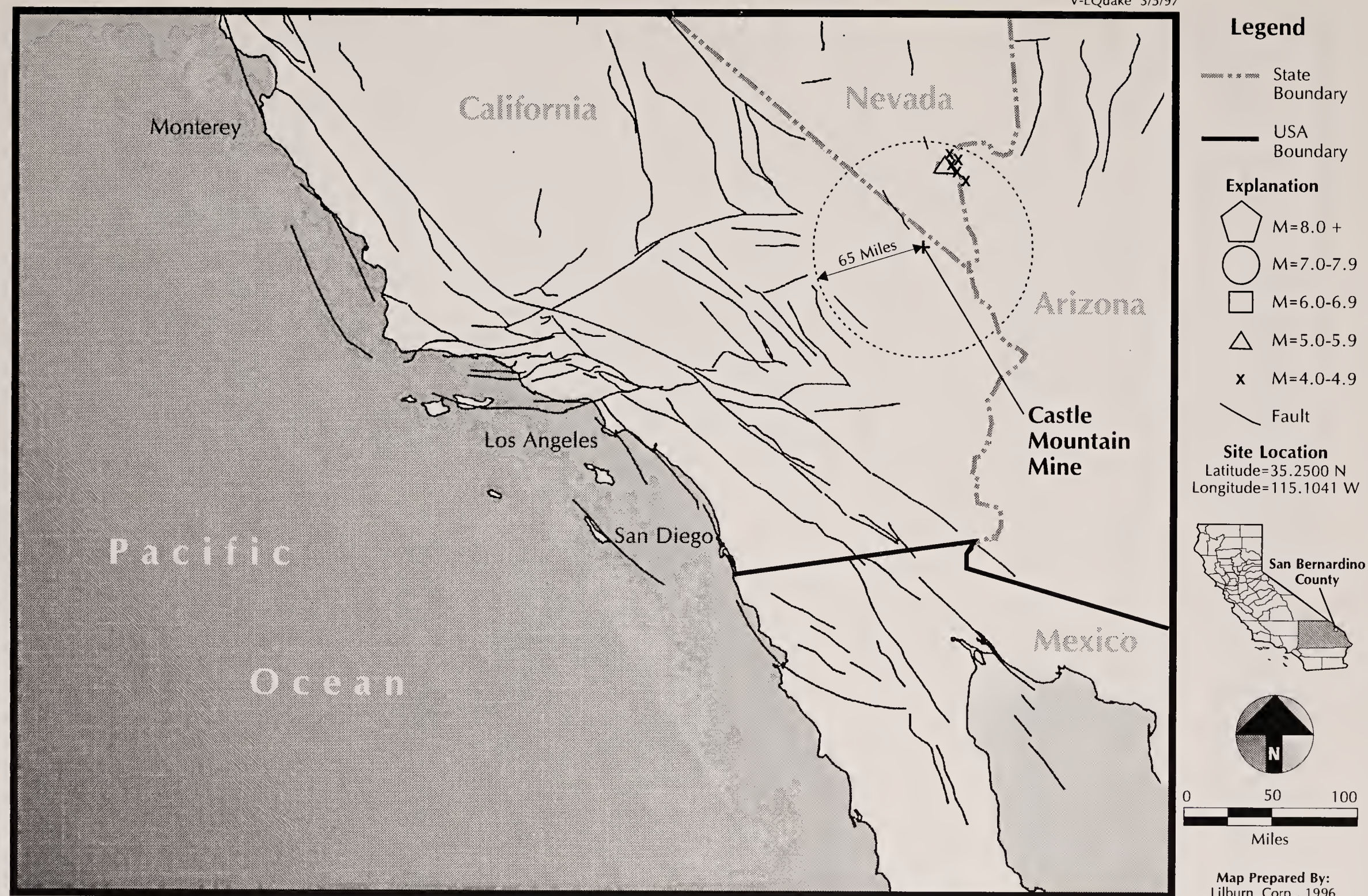
#### Mineral Resources

The known ore reserves for the Castle Mountain mine lie in the northeast portion of the project site, identified as the Lesley Ann, Jumbo, Oro Belle, Hart Tunnel and South Extension deposits. The Hart Tunnel and South Extension deposits have been confirmed as a result of ongoing mining and drilling activities subsequent to previous

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<sup>1</sup>  $g$  = gravitational acceleration of the earth. This measurement of ground motion is typically measured relative to a percentage of the earth's movement.





Note: Regional Major Faults are shown;  
earthquake magnitudes shown only  
within 65 miles of site.

## Faults and Historical Earthquakes

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Map Prepared By:  
Lilburn Corp., 1996

Figure 3.2-1



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

<b>TABLE 3.2-1</b> <b>POTENTIAL PEAK HORIZONTAL GROUND ACCELERATION (PHGA)</b> <b>FOR A MAXIMUM CREDIBLE (MCE) OR MAXIMUM PROBABLE EARTHQUAKE (MPE)</b>					
Fault	Distance (miles), Direction	Magnitude <sup>1</sup>		PHGA (g) <sup>2</sup> Boore, 1993a	
		MCE	MPE	MCE	MPE
Bristol Mountain	56, SW	7.0	5.75	0.04	0.02
Pahrump - Stateline	18, N	7.0	5.75	0.10	0.05

Notes:

<sup>1</sup> Moment Magnitude

<sup>2</sup> Random - Mean, Site Class A, at or near the ground surface

environmental documentation related to the Castle Mountain project.

#### Existing Mining Facilities

The existing mining operation has resulted in the creation of mining pits and overburden site. No significant problems with landsliding, slumping, or other geologic hazards have been reported for the ongoing operation. The existing mining operation operates under permits that comply with SMARA and other applicable regulations concerning slopes of the overburden site and of the mine pit.

The pit walls have been designed for stability, both during mining and following reclamation. Slope stability was analyzed for the Jumbo South and Lesley Ann Mine Pits by Call & Nicholas, Inc., in January 1993. The report included recommended slope angles for stability, and also recommended monitoring for stability during mining. The conclusion of the report was that, using the techniques and slope design angles recommended in the report, pit walls should be sufficiently stable that, with recommended monitoring, "dangerous conditions can be recognized and predicted with sufficient time to move

personnel and equipment" (Call & Nicholas, Inc., 1993, p. 1-4).

Heap leach pad stability was analyzed based on: (1) the liner system's ability to withstand increased loading; (2) permeability of the lower lifts of ore under the increased loads; and (3) slope stability of the heap. In addition, an evaluation was made to estimate the ultimate feasible height of the heap (Glasgow Engineering, 1996). The analysis recommended measures to ensure stability of the heap leach pad during operations for current and increased heights. These recommendations include buttressing the toe of the heap to the perimeter berm to increase heap stability and slope angles and configurations for maximum slope stability at different stages of heap leach pad development. These measures were developed to ensure heap leach stability for the Proposed Action. In addition, the analysis concluded that the High Density Polyethylene (HDPE) liner puncture resistance is adequate for a heap leach pad of up to 200 feet high. The proposed height (150 feet) is within this range.



**TABLE 3.2-2**  
**MODIFIED MERCALLI SCALE, 1956 VERSION<sup>(1)</sup>**

Intensity		Effects	$v^{(2)}$	$g^{(3)}$
M <sup>(4)</sup>	I.	Not felt. Marginal and long-period effects of large earthquakes.		
	II.	Felt by persons at rest, on upper floors, or favorably placed.		
3	III.	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.		0.0035-0.007
	IV.	Hanging objects swing. Vibration like passing of heavy trucks; or sensation of a jolt like a heavy ball striking the walls. Standing motor cars rock. Windows, dishes, doors rattle. Glasses clink. Crockery clashes. In the upper range of IV wooden walls and frame creak.		0.007-0.015
4	V.	Felt outdoors; direction estimated. Sleepers awakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.	1-3	0.015-0.035
	VI.	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked. Small bells ring (church, school). Trees, bushes shaken (visibly, or heard to rustle-CFR).	3-7	0.035-0.07
6	VII.	Difficult to stand. Noticed by drivers of motor cars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices (also unbraced parapets and architectural ornaments-CFR). Some cracks in masonry C. Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Concrete irrigation ditches damaged.	7-20	0.07-0.15
	VIII.	Steering of motor cars affected. Damage to masonry C; partial collapse. Some damage to masonry B; none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off. Branches broken from trees. Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes.	20-60	0.15-0.35
7	IX.	General panic. Masonry D destroyed; masonry C heavily damaged, sometimes with complete collapse; masonry B seriously damaged. (General damage to foundation-CFR.) Frame structures if not bolted, shifted off foundations. Frames cracked. Serious damage to reservoirs. Underground pipes broken. conspicuous cracks in ground. In alluviated areas sand and mud ejected, earthquake fountains, sand craters.	60-200	0.35-0.7
8	X.	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.	200-500	0.7-1.2
	XI.	Rails bent greatly. Underground pipelines completely out of service.	>500	>1.2
	XII.	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into the air.		

**NOTES:**

Masonry A, B, C, D. To avoid ambiguity of language, the quality of masonry, brick or otherwise, is specified by the following lettering (which has no connection with the conventional Class A, B, C construction).

- Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.: designed to resist lateral forces.
- Masonry B: Good workmanship, and mortar, reinforced, but not designed to resist lateral forces.
- Masonry C: Ordinary workmanship and mortar, no extreme weaknesses such as non-tied-in corners, but masonry is neither reinforced nor designed against horizontal forces.
- Masonry D: Weak materials, such as adobe; poor mortar, low standards of workmanship; weak horizontally.

(1) From Richter (1958). Adapted with permission from W. H. Freeman and Company

(2) Average peak ground velocity. Cm/s

(3) Average peak acceleration (away from source)

(4) Magnitude Correlation

CFR - CF Richter

SOURCE: Hunt Geotechnical Engineering, Investigation Manual, Rev. Ed., 1984

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

#### 3.2.2 Environmental Consequences and Mitigation Measures

Potential impacts to geologic resources from the Mine Plan Amendments are addressed in this section. These impacts are generally as follows:

- Impacts related to seismicity
- Impacts related to slope stability

#### Standards of Significance

The project would be considered to have a significant geologic impact if it would result in the following:

3.2A A project component could create a substantial geologic hazard which could affect workers or other persons in the project area or substantially damage structures.

3.2B The release of potentially hazardous materials into the environment could result from the occurrence of a geologic event.

#### Impact 3.2-1: Faults, Seismicity, and Slope Stability Impacts

**PROPOSED ACTION:** *Mining would create new cut slopes that could be subject to failures and erosion.*

The Proposed Action would result in the expansion and extension of mining operations on the mine site. Specifically, the Proposed Action would result in:

- Sequential backfilling of some mine pits and expansion of other mine pits;

- Creation of the North Overburden Site, as an extension of the North Clay Pit Reclamation Area; and
- Expansion of the heap leach pad and excavation of additional stormwater basin areas.

Potential impacts related to seismicity and slope stability include potential risks to mine facilities, structures, and personnel resulting from a seismic event or slope failure. In addition, at the cessation of mining, the site would be reclaimed to open space for use within public lands thereby causing a potential risk to the general public visiting the site at an unspecified future date. These potential impacts would be localized to the bottom of mine pits, and areas directly down slope from overburden sites.

The Previous EIS/EIR found that the current mining operation (as implemented) would not create geologic hazards if pit walls are engineered at safe slopes considering the geologic properties of the site.

The creation of the North Overburden Site, the expansion of mine pits, and other related disturbances are not expected to result in any additional geologic impacts. Geologic analyses done for the Previous EIS/EIS, in addition to the current analysis on seismic activity near the mine site, indicate that seismic effects to the mine site are expected to be minimal over both the short and long term.

Pit walls, heap leach pads, and overburden storage site slopes would not be adversely affected by implementing the Proposed Action. These facilities would continue to be engineered using measures identified in slope stability analyses to ensure long-term stability.



These measures include engineering pit walls at safe angles, and monitoring safe angles for heap leach pad and overburden storage site slopes. Section 3.2-1 describes other measures to ensure long-term stability of these mine facilities.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented as part of the ongoing mine operation. They are monitored regularly for both implementation and effectiveness.

Continued implementation of the following measures would adequately address potential geologic hazards for the Mine Plan Amendments.

#### COUNTY CONDITIONS OF APPROVAL

6. At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) overall for the overburden pile and 2.5:1 overall for the heap leach piles. Final slopes shall be contoured as provided for in the Mine/Reclamation Plan sections 1.8 and 1.10.
35. All structures and facilities shall meet applicable seismic building safety standards. [DEIR p. 6.2-1; (See also Conditions of Approval Nos. 6-7 above concerning artificial slopes).]
36. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. [DEIR p. 5.2-4.]

#### BLM STIPULATIONS

8. All structures and facilities shall meet applicable seismic buildings safety standards.

9. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed.
10. Protore shall be separated in the overburden pile to the extent possible.
92. At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) overall for the overburden pile and 2.5:1 overall for the heap leach piles. Final slopes shall be contoured as provided for in the Reclamation Plan sections 1.8 and 1.10.
93. Pit walls shall be constructed in accordance with the standards of the Mine Safety and Health Administration.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional geology related impacts from faults, seismicity, and slope stability to the currently permitted mine operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** *This alternative could result in additional impacts related to faults and seismicity.*

This alternative would vertically and laterally expand the South Overburden Site. The North Overburden Site (other than the North Clay Pit Reclamation Area) would be avoided, however, thereby reducing the impacts when compared with the Proposed Action.

Potential impacts related to seismicity and slope stability include potential risks to mine facilities, structures, and personnel resulting from a seismic event or slope failure. In addition, at the cessation of mining, the site would be reclaimed to open space for use within public lands, thereby causing a potential risk to the general public visiting the site at an unspecified future date. The potential impacts would be concentrated to areas directly downslope from the expanded South Overburden Site. Geologic analyses done for the Previous EIS/EIR, in addition to current analysis on seismic activity near the mine site, indicate that seismic effects to the mine site are expected to be minimal over both the short term and the long term.

***Mitigation Measures:*** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

***Level of Significance After Mitigation:*** Less than significant.

#### **Impact 3.2-2: Hazardous Material Release Impacts**

***PROPOSED ACTION:*** *The Proposed Action would extend the potential for the release of hazardous materials resulting from a geologic event.*

The Proposed Action would not create any additional sources of hazardous chemicals. However, it would extend the mine life by 10 years, thereby resulting in a 10-year extension for the potential of release of hazardous chemicals. The transport, storage, and use of hazardous materials would follow the currently permitted standard operating procedures, already implemented at the mine, described in detail in Impact 3.10-2, under Mitigation Measures. The Proposed Action would continue to use these currently permitted procedures.

The Previous EIS/EIR found that the current mining operation (as implemented) would not create geologic hazards if pit walls are engineered at safe slopes with respect to the geologic conditions on the site. Mitigation measures mandated that pit walls be engineered at safe slopes. These mitigation measures will apply to the Proposed Action. In addition, the potential for a geologic event at the mine site is low, as described in Section 3.2-1; all mine pits and appurtenant facilities and structures will follow the specific mitigation measures implemented for potential geologic and seismic hazards at the mine site.

***Mitigation Measures:*** No additional mitigation would be necessary.

***Level of Significance After Mitigation:*** Less than significant.



**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional geologic hazards from the potential release of hazardous materials to the currently permitted mine operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The South Overburden Site Expansion Alternative would extend the potential for the release of hazardous materials resulting from a geologic event.*

The South Overburden Site Expansion Alternative would not create any additional sources of hazardous chemicals. However, it would extend the mine life by 10 years, thereby extending the potential for release of hazardous chemicals by 10 years. The transport, storage, and use of hazardous materials would follow the currently permitted standard operating procedures, already implemented at the mine, and are described in detail in Impact 3.10-2, under Mitigation Measures. The South Overburden Site Alternative would continue to use the currently permitted operating procedures.

The Previous EIS/EIR found that the current mining operation (as implemented) would not create geologic hazards if pit walls are engineered at safe slopes with respect to the geologic conditions on the site. Mitigation measures mandated that pit walls be engineered at safe slopes. Development of mine pits and appurtenant facilities and structures will follow the specific mitigation measures implemented for potential geologic and seismic hazards at the mine site.

**Mitigation Measures:** No additional mitigation would be necessary

**Level of Significance After Mitigation:** Less than significant.

### 3.2.3 Cumulative Impacts and Mitigation Measures

The creation of the North Overburden Site, the expansion of mine pits, and other related disturbances are not expected to result in any additional geologic impacts. Seismic events to the mine site are expected to be minimal. The Proposed Action could contribute to cumulative impacts related to seismicity and slope stability including potential risks to mine facilities, structures, and personnel resulting from a seismic event or slope failure. In addition, at the cessation of mining, the site would be reclaimed to open space for use within public lands thereby causing a potential risk to future visitors to the site.

Other developments occurring in the vicinity of the Castle Mountain Mine include the Molycorp Mountain Pass Mine, the PPM Golf Course at Stateline and the Golden Quail Mine. Potential geologic impacts would be site-specific and would not overlap with impacts associated with the Proposed Action.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Mitigation measures already implemented in the current mining operations, in addition to the approved Reclamation Plan, would adequately address potential geologic hazards for both the Proposed Action and ongoing operations, reducing cumulative geologic impacts to a less than significant level.

***Mitigation Measures:*** No additional mitigation would be necessary

***Level of Significance After Mitigation:*** Less than significant.

#### 3.2.4 Residual Adverse Effects

***PROPOSED ACTION:*** The Proposed Action would result in additional geology impacts related to seismicity and slope stability. All impacts are mitigable to a less than significant level. The Proposed Action would result in permanent changes to the landscape by the expansion of mine pits and expansion/creation of overburden sites.

***NO ACTION ALTERNATIVE:*** Since the No Action Alternative would not result in any changes to current operations, there would be no residual adverse effects.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** Implementation of the South Overburden Site Expansion Alternative would result in changes to the South Overburden Site only. These impacts would be mitigated through the County Conditions of Approval, BLM Stipulations, and the implementation of the Reclamation Plan. The vertical and lateral expansion of the South Overburden Site would result in permanent changes to the landscape.



**SECTION 3.3**  
**WATER RESOURCES**

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### 3.3 WATER RESOURCES

#### 3.3.1 Affected Environment

##### Introduction

Water resources were the single largest issue evaluated in the Previous EIS/EIR, prompted by concerns that mine groundwater withdrawals could affect surface flows at Piute Spring. Piute Spring is a perennial water source with associated riparian habitat, located at the southeastern limits of Lanfair Valley approximately 16 miles southeast of the West Well Field. Because Lanfair Valley hydrogeology had not previously been comprehensively documented, extensive efforts were undertaken to assimilate previous hydrology reports and data, to characterize the aquifers geology (including saturated thickness, transmissivity, and storativity) develop potentiometric contours (a groundwater elevation map), and to establish the water balance (recharge and discharge). Modeling of groundwater withdrawal and aquifer recovery was then completed. Lanfair Valley is a relatively large drainage basin encompassing some 340 square miles. Water use was very limited at the time of this study.

The previous analysis is directly applicable to the Proposed Action to extend and expand the operation. The previous analysis was reviewed with respect to the current proposal, together with water production data and groundwater monitoring results. A supplemental evaluation has been completed to determine the potential effects of additional groundwater withdrawal in the vicinity of the mine pits.

The following section for the affected environment summarizes key aspects of the hydrologic conditions for Lanfair Valley,

much of which was completed in the Previous EIS/EIR. The reader is referred to that documentation if additional detail on hydrogeologic and geologic conditions is desired.

##### Lanfair Valley Conditions

###### *Surface Water and Drainage Basin*

Lanfair Valley consists of a semi-enclosed, 340-square mile surface water drainage area. The valley is surrounded by mountains or areas of high bedrock, except for several gaps where surface and ground water drain into adjacent valleys. The valley floor is elevated relative to the adjacent Piute, Ivanpah, and Fenner Valleys, apparently the result of alluvial backfilling within the surrounding areas of high bedrock.

The maximum basin dimensions are approximately 20 miles (east to west) and 17 miles (north to south). Elevations on the basin floor (alluvial material) range from 3,200 feet at the southeastern extreme to over 5,000 feet at the northern limits adjacent to the New York Mountains. Topographic relief on the basin floor is relatively low, with gradients varying from approximately 50 to 200 feet per mile.

Streams within the basin are ephemeral, flowing only for brief periods in direct response to precipitation. Piute Spring is an exception, as it flows perennially. The valley contains the three surface watershed subbasins. The northeastern watershed, within which the West Well Field and Castle Mountain Mine are located, covers an area of approximately 240 square miles. Surface water in this watershed flows in several unnamed washes that trend to the southeast and join at the southeast corner of Lanfair



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Valley to form Sacramento Wash, which flows into Fenner Valley. Surface water drainage to Piute Spring is limited to a 5 square mile-watershed area adjacent to the south end of the Piute Range. Piute Spring is an important water resource because it is a perennial surface flow. The spring discharge supports riparian vegetation along a linear distance of approximately 1 mile into Piute Valley, which represents a locally unique habitat.

#### **Groundwater, Hydrology and Recharge**

Unconsolidated alluvial sediments are the primary source of groundwater in Lanfair Valley. The thickness of the alluvium increases to the south and southeast away from the Castle Mountains. Hydrologic test data from wells in the West Well Field and at the mine site indicate a porosity of 0.2 to 0.05 and hydraulic conductivity of  $1.4 \times 10^{-3}$  to  $9.1 \times 10^{-4}$  cm/sec for unconsolidated sediments. These tests also indicate a porosity less than 0.001 and a hydraulic conductivity of  $3.9 \times 10^{-4}$  to  $4.5 \times 10^{-5}$  cm/sec for volcanic rock.

Contours of groundwater elevation (potentiometric surface) estimated from well and spring data indicate the potentiometric surface highest near the mountains with a slope that becomes more gradual to the southeast. This generally coincides with the topography of the area. Depth to groundwater is shallowest in the western recharge portion of the basin and becomes deeper toward the east. The general groundwater flow direction of most of Lanfair Valley basin is toward the east-southeast. Localized deviations exist due to geologic and structural differences. Flow from the southwest portion of the basin is toward the south. Groundwater elevations in the vicinity of the mine are shown in Figure 3.3-1.

Groundwater flow velocity through the unconsolidated deposits in the eastern portion of Lanfair Valley is estimated to be between approximately 60 and 140 feet per year, based on the gradients and the hydraulic conductivities (permeabilities) established for the valley. These velocities indicate a groundwater travel time of 600 to 1,400 years along the 16-mile distance between the West Well Field and Piute Spring. These flow velocities also indicate a total potential flow through the eastern portion of the valley of between 2,500 and 8,000 acre-feet per year.

An extensive evaluation of natural recharge was conducted for the Previous EIS/EIR. The analyses determined that average recharge to the entire Lanfair Valley is within a range of 2,000 to 5,000 acre-feet per year, and annual recharge in the area upgradient of the West Well Field is 300 to 500 acre-feet annually.

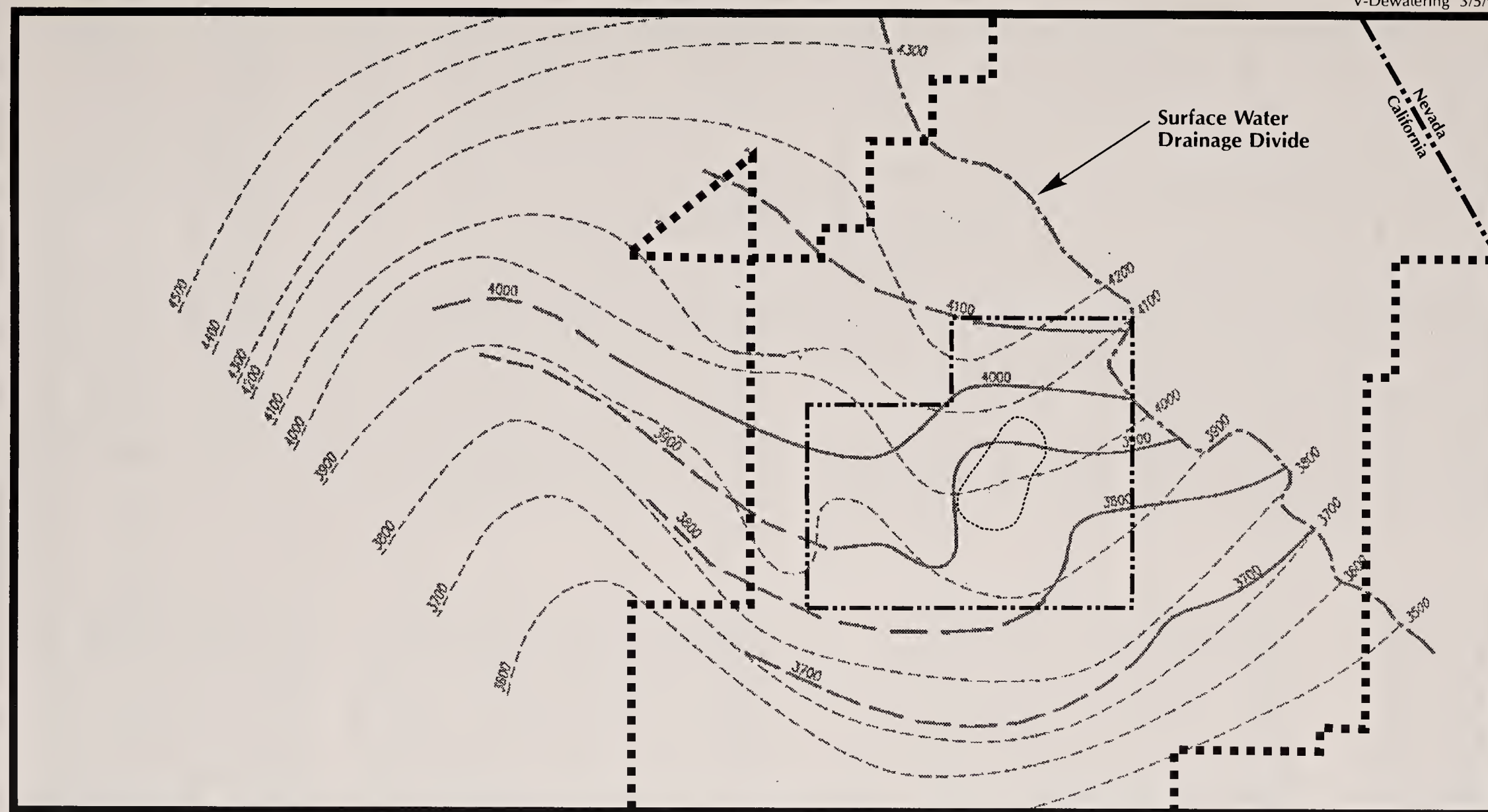
#### **Mine Groundwater Production**

##### ***West Well Field and Water Use***

The West Well Field is an approximate 9-square mile area located northwest of the Castle Mountain Mine. Production wells are located throughout the well field area, but concentrated along the Hart Mine Road, where the main water pipeline leads to the mine site.

Exploratory drilling and pump tests conducted in the early stages of mine feasibility studies indicated that several wells would be necessary to produce the water necessary for mine operations. The geology of Northern Lanfair Valley is complex, with interbedded volcanics and alluvial fill; as a result, the continuity of lithologic units among wells was limited, and wells in close proximity can produce water at substantially different rates.





### Legend

- |       |                              |       |  |       |   |
|-------|------------------------------|-------|--|-------|---|
| 4100  | Groundwater Elevation        | ----- | Approximate Boundary of Mine Pits Area | ----- | Pre-Mining Water Table Elevation (1987-1988)) |
| ----- | Mine Site Boundary (revised) | ■■■■■ | Viceroy Claims Boundary                | ----- | Current Water Table Elevation (1995-1996)     |

0 8,000  
Feet

Map Prepared By:  
Lilburn Corp., 1996  
Data Source:  
Terracon, 1996  
All Locations are Approximate



Groundwater Contour Interval=100 Feet

## Groundwater Elevation Contours

CASTLE MOUNTAIN MINE  
San Bernardino County, California

LILBURN  
CORPORATION

Figure 3.3-1

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

In order to provide a consistent source of water for mining operations, based on the complex geology of the valley, the West Well Field area was therefore designated as a collective series of wells.

The Previous EIS/EIR evaluated water use as it was projected in the initial mine plan application at up to 725 acre-feet per year. Actual water production since pumping began in 1991 has varied from approximately 100 acre-feet at start up, to over 500 acre-feet, with an average through 1996 of approximately 400 acre-feet per year. All water production through June 1995 was from the West Well Field. Since that date, some water production has been from dewatering activities in the Lesley Ann Mine Pit (discussed later in this section).

#### ***Modeling and Monitoring***

Piute Spring flow has been measured since 1987 as part of a program to establish baseline data. As shown in Table 3.3-1, the monthly data collected at Piute Spring demonstrate that flows have been in the range of approximately 25 to 50 gallons per minute. As anticipated based on the Previous EIS/EIR modeling, there has been no discernible change in the flow patterns at Piute Spring before or after pumping at the Castle Mountain well field began in April 1991. Quarterly stream samples taken for water quality analysis show water quality at Piute Spring is consistent.

Drawdown of the Lanfair Valley aquifer as a result of well production was estimated in the Previous EIS/EIR, and is shown in Figure 3.3-2. Possible effects on groundwater levels, Piute Spring flow, and general water availability were evaluated with several analytical and digital groundwater models. These models were described in the Previous

EIS/EIR as well as in two other reports: *Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring*, (BLM, 1989) (an appendix to the Previous Draft EIS/EIR) and *Development of a Ground Water Supply for Viceroy Gold Corporation, Castle Mountain Project*, (The Mark Group, 1988). These models indicated that only localized lowering of water levels will occur in the vicinity of the well field, and that effects on Piute Spring would not occur. Although the Proposed Action and South Overburden Site Expansion Alternative would continue the withdrawal of groundwater for an additional 10 years, the amount of withdrawal would be less than originally modeled. Therefore, the model is still valid with regard to Piute Spring. These studies, however, did not address any long-term groundwater withdrawals outside of mining operations.

In order to assure that the groundwater models were correct in their predictions, a monitoring plan was developed. In addition, in response to public comment, a Piute Spring water supply contingency plan was also prepared. These plans were provided in a report "*Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring*" (The Mark Group, 1990). This plan has been in place during mine operation, for the following purposes:

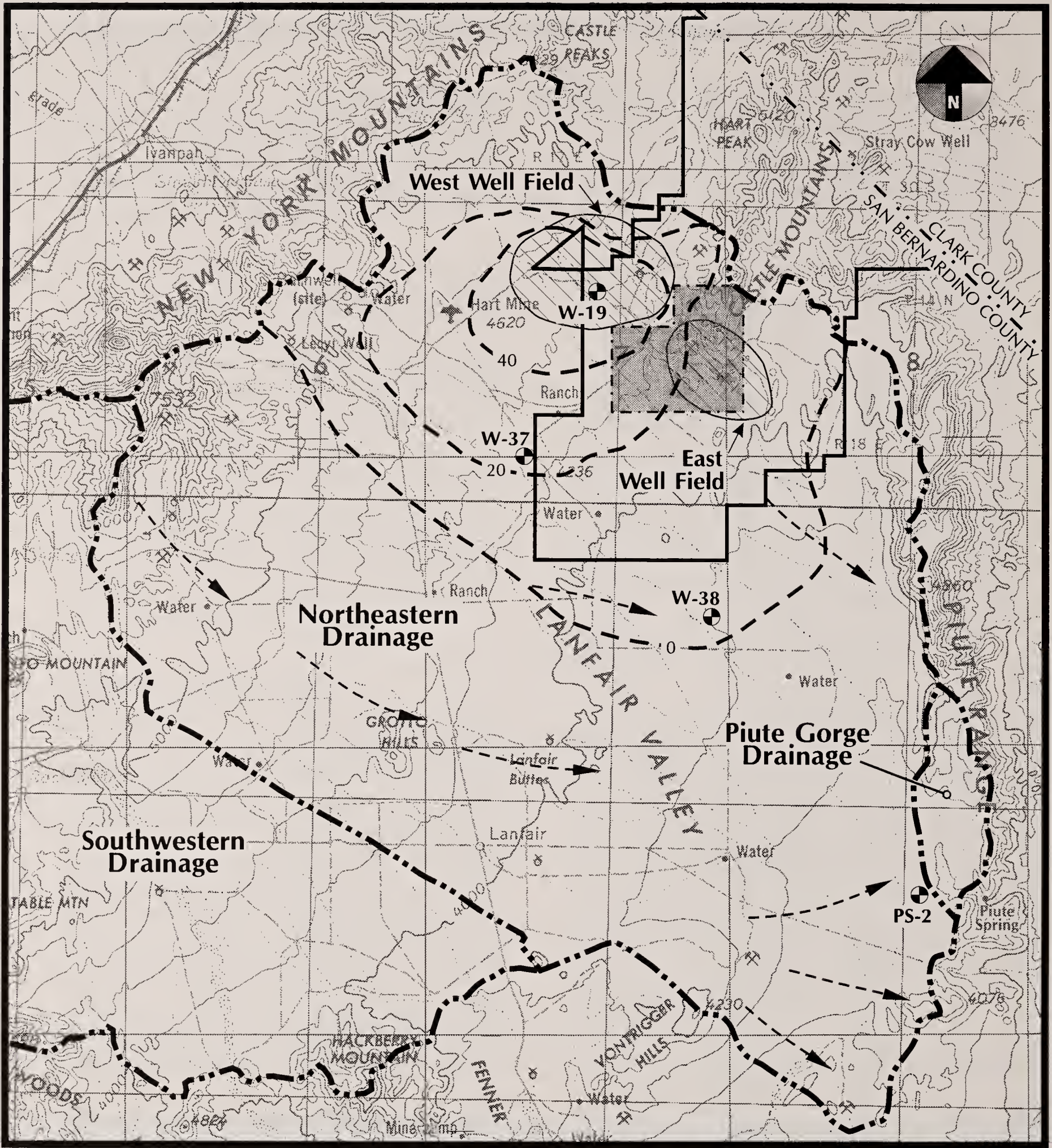
- Observe the effects of mine groundwater withdrawals,
- Provide an early indication if changes in groundwater levels are different than those predicted in the Previous EIS/EIR,
- Facilitate re-calibration and refinement of groundwater flow models of Lanfair Valley if necessary, and



**TABLE 3.3-1**  
**PIUTE SPRING MONITORING RESULTS**  
 (Spring Flow in Gallons per Minute)

	January	February	March	April	May	June	July	August	September	October	November	December
1987	-	-	-	-	-	41	-	37	41	45	45	45
1988	41	45	41	37	45	41	37	41	37	45	45	37
1989	45	45	34	42	47	41	37	41	41	30	41	45
1990	45	45	49	47	45	34	34	37	41	37	45	45
1991	45	45	45	37	30	30	30	27	37	21	39	37
1992	37	42	39	37	35	41	37	37	34	37	41	41
1993	49	54	54	45	54	45	45	49	45	49	45	58
1994	54	54	49	30	45	49	49	41	41	54	45	54
1995	49	41	45	49	37	37	41	41	37	45	41	49
1996	45	45	45	49	37	37	41	27	37	45	49	49





**Legend**

- |   |   |
|---|---|
| — Viceroy Claims Boundary               | — 20 — Drawdown Contour (feet) as predicted in Previous EIS/EIR (2) |
| ▨ Castle Mountain Mine Site             | — —> Direction of Groundwater Flow                                  |
| ▧ Well Field Areas                      | ⊙ Monitoring Wells  |
| - · - · - Surface Water Drainage Divide |   |

0 3 6  
Scale: 1"=3 Miles

Map Prepared By : Lilburn Corporation, 9/96  
Topography: 15 Min. U.S.G.S. Kingman, 1969

(1) Note: Boundaries are approximate.  
(2) Drawdown contours greater than 40 feet in immediate vicinity of West Well Field not shown.

**Predicted Drawdown**

CASTLE MOUNTAIN MINE  
San Bernardino County, California

**Figure 3.3-2**



Provide a detailed record of spring flow volume and quality at Piute Spring.

Specific triggers, based on the data collected, are established in the plan to activate contingency plans for additional monitoring wells, additional groundwater modeling, or supplying water to Piute Gorge. A conceptual design of the contingency water supply to Piute Gorge from either of two sources is also provided.

In compliance with this program, groundwater data has been collected to observe the effects of groundwater withdrawals. Piute Spring flow volume and quality have been established. Since changes in groundwater levels have not exceeded the modeled prediction, re-calibration of flow models has not been necessary and contingency plans have not needed to be implemented. This plan is in place and would continue to be effective through extended operation under the Proposed Action.

Five monitoring wells were established to record actual drawdown as it occurs:

- **W-19:**  
Located near the center of the well field.  
Predicted drawdown: 60+ feet.
- **W-3:**  
Located at the western limits of the well field.  
Predicted drawdown: 50± feet.
- **W-37:**  
Located approximately 2 miles south of the well field.  
Predicted drawdown: 25± feet.

- **W-38:**  
Located approximately 6 miles southeast of the well field.  
Predicted drawdown: 5± feet.
- **PS-2:**  
Located approximately 14 miles southeast of the well field.  
Predicted drawdown: 0 feet.

Monitoring data for these wells is shown in Table 3.3-2. The data for each well includes approximately 1 year of pre-production monitoring (1990-1992). Subsequently, monthly data shows that drawdown has been substantially less than predicted in the Previous EIS/EIR, as shown in Figure 3.3-3. After approximately 6 years of pumping, the only well that has actually shown drawdown is W-19, located immediately in the West Well Field. Wells W-3 and W-37 have actually shown *increases* in water level, as compared to the pre-mining condition. Wells W-38 and PS-2 remain unchanged. These results may be attributable to several factors, including:

- Aquifer characteristics, recharge and water use assumptions use for the Previous EIS/EIR evaluation were purposely conservative to assure that any likelihood of impact to Piute Spring would be identified;
- Actual average total mine use of water has been approximately 50 percent of that originally estimated; and within the range of recharge estimated for the well field area; and
- Permeability at well sites is lower than estimated, creating steep drawdown gradients in the immediate vicinity of the wells, and limiting the areal extent of drawdown influence.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

<b>TABLE 3.3-2</b> <b>GROUNDWATER MONITORING RESULTS</b> <b>(Depth from Surface to Groundwater in feet)</b>												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Monitor Well W-19 (Predicted Drawdown: 60+ feet)</b>												
1990	-	-	-	-	-	365.06	365.13	365.02	364.92	365.03	365.13	365.11
1991	365.45	364.98	365.32	365.27	-	-	365.73	365.88	366.00	366.09	365.76	365.95
1992	365.91	366.13	366.31	366.41	366.83	367.03	368.12	368.60	367.94	369.58	369.48	369.81
1993	370.04	369.98	370.18	370.43	370.51	370.91	371.22	371.58	371.86	371.99	372.50	373.09
1994	373.43	374.04	374.38	374.87	375.18	375.55	375.93	376.42	376.72	377.20	377.50	377.95
1995	378.25	378.62	378.88	379.22	379.61	379.89	380.22	380.47	380.82	381.10	381.42	381.47
1996	381.86	382.30	382.54	382.61	382.98	383.22	383.46	383.84	383.85	384.10	384.47	384.63
Net Change <sup>(1)</sup> :												-20
<b>Monitor Well W-3 (Predicted Drawdown: 50± feet)</b>												
1990	489.70	489.82	488.32	488.61	488.51	488.54	488.56	488.53	488.19	488.41	488.68	488.64
1991	488.93	488.37	488.87	488.76	488.71	488.66	488.76	488.75	488.80	488.70	488.27	488.10
1992	488.16	488.33	488.38	488.40	488.54	488.30	489.67	489.67	489.96	490.29	489.89	490.09
1993	490.33	490.24	490.12	190.31	490.21	490.35	490.55	490.60	490.80	490.51	490.61	490.04
1994	490.80	491.21	491.35	491.50	491.40	491.53	491.61	491.71	491.83	492.12	492.24	492.33
1995	492.48	492.46	492.62	492.70	492.95	493.00	493.08	493.18	493.31	493.42	493.67	493.59
1996	493.81	494.13	494.21	494.22	494.40	494.48	494.61	494.85	494.82	494.89	495.33	495.32
Net Change:												+6
<b>Monitor Well W-37 (Predicted Drawdown: 25± feet)</b>												
1990	-	-	-	-	-	-	-	-	-	616.35	614.86	613.62
1991	613.17	612.19	612.07	611.52	611.01	610.43	610.34	610.11	609.57	608.84	607.58	607.35
1992	607.08	606.60	606.24	606.11	605.20	609.20	608.51	606.86	605.59	604.61	603.64	603.29
1993	602.83	601.48	601.70	600.42	600.28	600.35	599.42	599.08	599.11	598.16	597.23	597.93
1994	597.39	596.59	595.78	595.32	595.16	595.03	595.18	595.23	593.83	595.80	593.36	593.36
1995	592.80	595.38	592.70	592.85	591.89	591.73	590.87	590.27	591.23	589.53	590.20	589.51
1996	588.44	587.89	588.67	588.67	588.00	587.69	588.44	587.67	586.68	585.99	586.29	586.27
Net Change:												+30



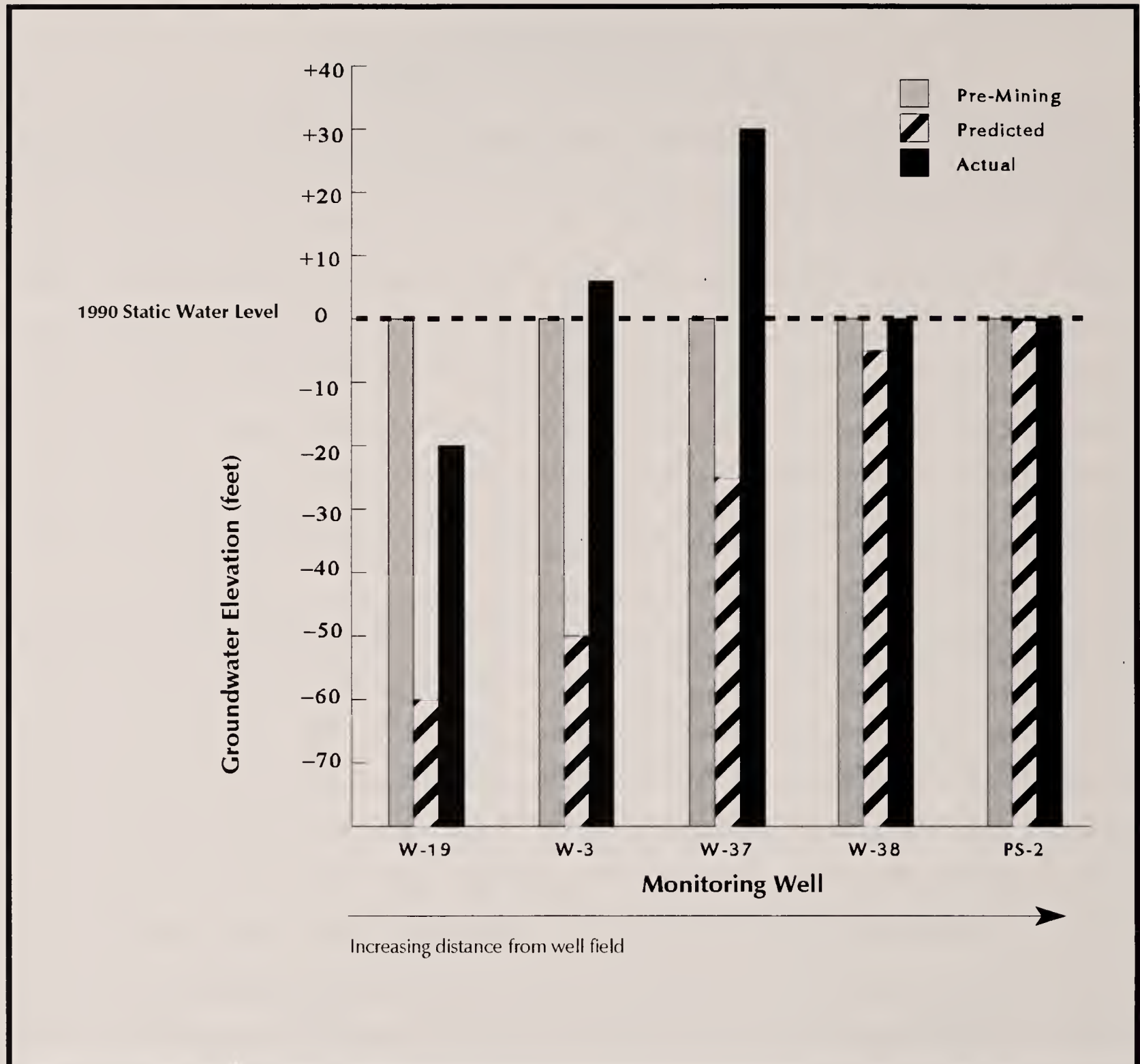
**TABLE 3.3-2 (Continued)**  
**GROUNDWATER MONITORING RESULTS**  
**(Depth from Surface to Groundwater in feet)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Monitor Well W-38 (Predicted Drawdown: 5± feet)</b>												
1990	-	-	-	-	-	-	-	-	757.57	756.48	757.16	756.95
1991	757.24	756.77	757.28	757.19	757.11	757.21	757.22	757.16	757.25	756.89	755.81	755.89
1992	755.95	756.13	756.00	755.72	755.84	755.10	756.80	756.57	756.90	757.07	756.53	756.72
1993	756.89	756.57	756.37	756.57	756.44	756.52	756.72	756.73	756.82	756.67	756.71	757.10
1994	756.64	756.95	757.13	756.97	756.93	757.02	757.05	757.00	757.05	757.33	757.41	757.27
1995	757.44	757.25	757.27	757.25	757.49	757.40	757.31	757.34	757.30	757.24	757.50	757.31
1996	757.24	757.55	757.56	757.63	757.58	757.55	757.65	757.75	757.70	757.72	757.97	757.90
Net Change:												0
<b>Monitor Well PS-2 (Predicted Drawdown: 0 feet)</b>												
1987	-	-	-	-	-	-	-	431.57	431.14	431.05	430.79	430.49
1988	430.44	430.21	430.16	430.33	430.33	434.40	434.39	433.95	432.67	432.18	432.15	431.79
1989	431.50	431.27	not read	431.10	430.73	430.76	430.72	430.69	430.47	430.44	430.26	430.14
1990	430.16	430.09	429.79	429.82	429.87	429.36	429.30	428.59	428.77	428.90	428.93	429.25
1991	429.30	429.34	428.24	428.42	428.68	428.55	428.81	428.92	428.95	429.21	428.33	428.36
1992	428.37	428.44	427.65	426.85	427.12	427.37	428.32	428.46	428.55	428.68	428.70	428.74
1993	428.75	428.21	428.24	428.25	428.25	428.25	428.23	428.24	428.26	428.26	428.70	428.30
1994	428.29	428.28	428.28	428.33	428.28	428.27	428.27	428.26	428.27	428.30	428.31	426.52
1995	not read	426.80	426.53	426.70	426.90	427.02	427.14	427.25	427.36	427.49	427.60	427.65
1996	427.76	427.87	427.91	427.94	427.98	428.05	428.08	428.13	428.17	428.23	428.28	428.28
Net Change:												0

**NOTE:**

(1) Net Change is difference between depth to water from first reading to most recent reading, rounded to nearest foot.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES



#### NOTES:

- (1) Pre-mining static water level as measured in 1990.
- (2) Predicted values are approximate, based on drawdown contours as modeled and mapped in the Previous EIS/EIR (Figure 5.3-1).
- (3) Actual water use through December 1996, as shown in Table 3.3-2.

## Groundwater Monitoring Results

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 3.3-3



As a result, drawdown has been restricted to the immediate vicinity of the West Well Field. Recharge may be currently occurring faster than discharge, resulting in increased aquifer saturated thickness.

As a conservative estimate of maximum potential groundwater effects, the Lanfair Valley aquifer model completed for the Previous EIS/EIR remains valid; existing conditions with mine operation remain within predicted parameters. Any future long-term use of these wells by the BLM or NPS may require additional analysis.

### ***Mine Pit Dewatering***

Little or no water was encountered in exploration wells in the East Well Field and in the area of the mine pits at the time of initial drilling; there were therefore no wells considered to be reliable for water production in this area. As water was not commonly encountered in exploratory boreholes at the depths considered feasible for open pit mining, it was expected that little or no water would be encountered in mine pit excavation. However, during the excavation of the Jumbo South and Lesley Ann pits, the water table in the bedrock aquifer in the pit area was intercepted as mining progressed to the lower depths. Water was encountered at elevation 3,920 in the Lesley Ann Pit. Seepage into the pit occurs at a rate of 60 to 100 gpm.

Re-assessment of the exploration results have lead to the conclusion that the apparent lack of water within the planned pit boundaries indicated by exploratory drilling was likely the result of a combination of factors, including the aquifer in the Jumbo South and Lesley Ann pit area being comprised of low permeability crystalline rocks, small-diameter

drill holes, and the considerable air pressure used for drilling.

Since June 1995, seepage of water into the mine pits has occurred. This inflow created difficult blasting and mining conditions, and crushing the wet ore adversely affected operational efficiencies. In order to remedy this situation, it was necessary to dewater the pit area. Mine pit water quality was analyzed, as shown in Table 3.3-3, and through June 1996, approximately 169 acre-feet of water were removed as mining proceeded. This water was used primarily for dust control on the mine haul roads. Mining in the Lesley Ann pit area was completed in February 1996.

Mining in the Jumbo and Oro Belle deposits has now been initiated. In order to facilitate mining of these deposits, Viceroy has installed pumps in the bottom of the Lesley Ann pit, to dewater the bedrock aquifer in adjacent pit areas.

Water removed in the dewatering effort is being used for dust suppression on mine haul roads and as part of the process water make-up requirement, supplanting an equivalent volume of water that would otherwise have to be pumped from the West Well Field for these purposes.

### **3.3.2 Environmental Consequences and Mitigation Measures**

Potential impacts to surface and groundwater resources from the Proposed Action are addressed in this section. These impacts are generally as follows:

- Impacts to the Lanfair Valley aquifer as a result of continued water use,

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

TABLE 3.3-3 MINE PIT WATER QUALITY (Mg/l)							
Parameter	Pit Well <sup>(1)</sup> Sample	Pit Sump <sup>(1)</sup> Sample	Background <sup>(2)</sup>	California MCL <sup>(3)</sup>	Federal		Standard Exceeded ?
					MCL	Secondary MCL	
Arsenic	0.025	0.045	0.028	0.05	--	--	No
Cadmium	<0.002	<0.002	0.0004	0.005	0.005	--	No
Chloride	18.7	40.9	29.7	--	--	250.0	No
Copper	0.005	<0.005	<0.02	--	--	1.0	No
Fluoride	0.356	0.435	0.65	2.0 <sup>(4)</sup>	4.0	2.0	No
Iron	0.081	0.091	<0.01	--	--	0.3	No
Manganese	0.004	0.004	<0.01	--	--	0.05	No
NO <sub>3</sub> +NO <sub>2</sub> (as Nitrogen)	2.08	8.70	ND	--	10.0	10.0	No
Potassium	2.6	5.12	3.1	--	--	--	No
Sodium	35.3	59.2	44.3	--	--	--	No
Sulfate	23.4	35.6	43.8	--	--	250.0	No
Zinc	0.006	0.005	0.04	--	--	5.0	No
pH	7.60	7.72	7.94	--	--	6.5 - 8.5	No
TDS	260	530 <sup>(6)</sup>	298	--	--	500	Yes

Source: (1) American Assay Laboratories. Analyses completed 6/15/95.

(2) Analytical Technologies. Sample of W-31 collected 5/20/88, and analysis performed 6/14/88.

(3) Maximum Contaminant Level of inorganic chemicals for drinking water. CCR §64431.

(4) MCL at temperature between 63.9°F and 70.6°F

(5) 40 CFR, §141.62 and §143.3

(6) This sample was taken from a limited body of surface water during active in-pit mining. Solids from dust and earth moving were therefore temporarily elevated.

- Impacts to surface or groundwater quality from mine ore and waste or from hydrocarbon, process solution or other chemicals used, and
- Impacts of potential stormwater to project facilities.

#### Standards of Significance

The project would be considered to have a significant effect on hydrology and water quality if it would result in:



### ***Groundwater Flow and Quantity***

- 3.3A Substantial changes in the quantity of groundwater available to established wells through withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability.
- 3.3B Altered direction or rate of flow of groundwater.
- 3.3C Substantial reduction in the amount of groundwater otherwise available for public water supplies or required for support of natural resources.

### ***Surface and Groundwater Quality***

- 3.3D Discharge into surface water or other alteration of surface water quality (e.g., temperature, dissolved oxygen, or turbidity) in excess of applicable waste discharge requirements.
- 3.3E Impacts to groundwater quality.

### ***Surface Flow and Drainage***

- 3.3F Substantial changes in absorption rates, drainage patterns, or rate and amount of surface runoff.
- 3.3G Exposure of people or property to water-related hazards such as flooding (100-year or more frequent flood frequency may be appropriate threshold).
- 3.3H Creation of artificial water bodies that pose safety hazards.

### **Impact 3.3-1: Groundwater Withdrawal**

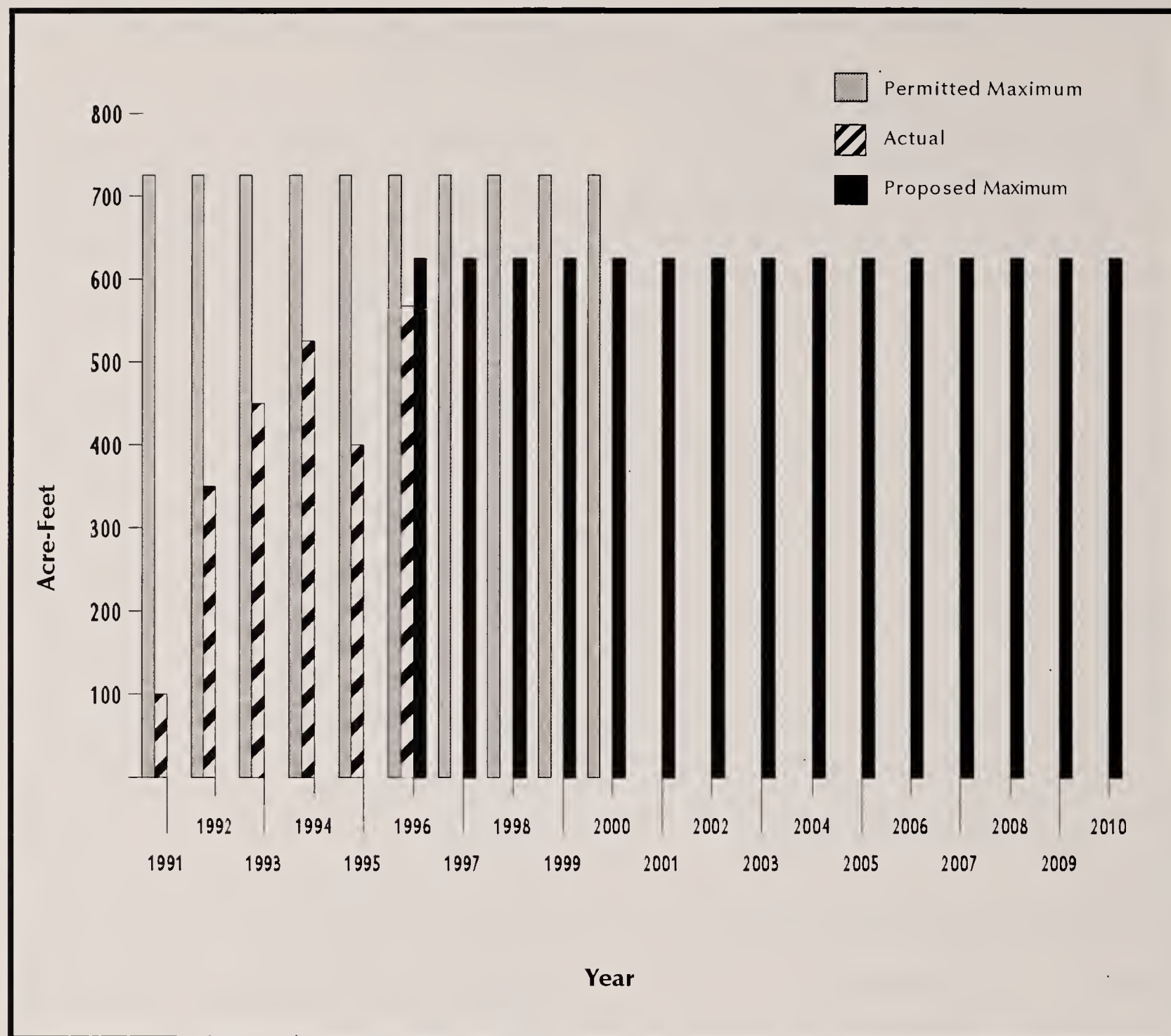
***PROPOSED ACTION:*** *The proposed continuance of mine operations would result in additional use of Lanfair Valley groundwater resources through an extended period of withdrawal, and an increase in average annual use.*

The potential for the Castle Mountain Mine to affect surface water flows at Piute Spring was one of the greatest public concerns expressed for the initial mine project. Extensive documentation and analysis of Lanfair Valley conditions and potential aquifer impacts were therefore completed in the Previous EIS/EIR. The results demonstrated that the greatest extent of aquifer drawdown would occur during the initial years of mine operation, and that the areal extent would be limited to northern Lanfair Valley, predominantly in the vicinity of the West Well Field. Following cessation of mining, groundwater levels would immediately begin to recover, with the aquifer predicted to substantially recharge within 7 years following mining. Flow at Piute Spring, located approximately 16 miles south of the well field, would not be jeopardized. Extensive groundwater monitoring requirements were adopted to confirm that drawdown would not exceed predicted levels.

#### ***West Well Field***

Permitted, actual, and proposed annual water use is shown in Figure 3.3-4. The initial application for the Castle Mountain Mine and the Previous EIS/EIR evaluation, were based on potential maximum average production of 725 acre-feet annually. Predicted maximum drawdown at each of the five monitoring wells (shown in Figure 3.3-3) reveals that actual

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES



#### NOTES:

- (1) Previous (1989) EIS/EIR projected water use is up to 725 acre-feet / year.
- (2) Water production volume since inception of pumping through 1996 has averaged approximately 400 acre-feet / year.
- (3) Proposed Action water use is up to 625 acre-feet / year.

Source: Terracon, 1996

#### Annual Water Use

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 3.3-4



pumping through 1996 averaged approximately 400 acre-feet annually. Because water use has been, and is expected to be, less than originally anticipated, the Proposed Action includes a reduction in the potential maximum average production rate to 625 acre-feet per year (refer to Figure 3.3-4). Actual annual water use would be extended for 10 years, and at existing rates averaging between 400 and 500 acre-feet per year, depending upon annual precipitation and operational needs. Recharge in the area upgradient of the West Well Field was previously estimated at 300 to 500 acre-feet annually, which is within the range of actual water use. The aquifer effects, presented in Table 3.3-2 and graphically depicted in Figure 3.3-3, reveal that actual drawdown is substantially less than was predicted in the Previous EIS/EIR. Wells W-3 and W-37 nearest the well field have actually increased in water availability as compared to their pre-mining 1990 static water levels. Continued use at these production rates is not expected to reduce water levels below their previously predicted drawdown.

As the actual aquifer impacts experienced as a result of well production are less than originally anticipated, continued groundwater use for the extended period of operation would not pose a threat to Piute Spring. Continued water use will be subject to the established conditions for well field monitoring; these measures provide for contingencies in the event that groundwater levels reach the maximum predicted limits, including:

- In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be

monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation. (Condition 40c)

- In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and other information shall be submitted to BLM for its consideration and decision respecting additional mitigation measures, if any. (Condition 40d)
- BLM's decision respecting proposed additional mitigation actions (if any) arising from the reevaluation shall be circulated for public review and comment prior to implementation. (Condition 40e)
- If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan. (Condition 40f)

These measures will continue to assure that groundwater withdrawals remain within acceptable limits and that Piute Spring will not be affected. No public or other private wells or natural springs occur in Lanfair Valley locations that would be significantly affected by groundwater withdrawals for the Proposed Action.

### *East Well Field*

As discussed in Section 3.3.1, water encountered in development of the Jumbo South-Lesley Ann mine pit has been removed during mining and used as make-up water, primarily for dust control. Availability of this water (approximately 100 gallons per minute (gpm) from the Castle Mountain bedrock further reduces the need for pumping at the West Well Field. It is therefore proposed that



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

this source continue to be used as it would continue to decrease localized drawdown effects in the West Well Field .

Mine pit water quality analysis (refer to Table 3.3-3) shows the water does not contain excess levels of harmful constituents, and is acceptable for continued mine use.

#### **Volumetric Significance of Mine Pit Groundwater Pumping**

An evaluation of the water availability and effects of pumping from the mine pits was completed (Terracon, 1996). The analysis accounts for the total volumes of water in use and future projections.

The volume of water pumped from the mine pits to date (169 acre-feet) amounts to approximately 0.01 percent of the total water volume in the upper 100 feet of saturated alluvium in the eastern portion of the Lanfair Valley. Assuming the pit water can continue to be recovered for the remaining period of active mining under the Proposed Action, an average of 100 gpm would be pumped from the mine pit area. This equates to approximately 2,420 acre-feet or approximately 0.2 percent of the groundwater in storage in the eastern portion of Lanfair Valley.

Total water utilization for the Castle Mountain Mine takes into account water utilization to date and projected future groundwater pumping. Maximum average projected future use is based on pumping of 625 acre-feet per year (387 gpm). Up to 100 gpm would be pumped from the pit area; the balance would continue to be from the West Well Field. With a projected mine operating life through 2010, and an annual withdrawal of 625 acre-feet, the volume would be 9,375 acre-feet. Pumping to date amounts to

approximately 2,074 acre-feet of which 1,905 acre-feet is from the West Well Field and 169 acre-feet is from the East Well Field/pit area. The reclamation period (10 years) water demand is 2.3 acre-feet per year for a total of 23 acre-feet total. Thus total pumping over the entire life of the project is on the order of 11,200 to 11,500 acre-feet. This would be 1 percent of the water in storage in only the upper 100 feet of saturated alluvium in the eastern portion of Lanfair Valley. Over an approximately 30-year period, natural recharge would amount to an estimated 34,200 acre-feet or approximately 1,140 acre-feet per year in the Northeastern Drainage area of Lanfair Valley.

Combined water use through June 1996 from the West Well Field (1,905 acre-feet) and the pits (160 acre-feet) is insignificant as compared to the water in storage (1,150,000 acre-feet) in the upper 100 feet of saturated alluvium of Lanfair Valley. Utilization of the pit water will supplement water pumped from the West Well Field, thereby further distributing pumping, minimizing localized drawdown effects, and extending in time but not materially altering the overall effects of water usage on the Lanfair Valley aquifer as described in the Previous EIS/EIR.

It is presently uncertain whether the mine pit dewatering activities will be capable of supplying 100 gpm through 2010 (equal to 2,420 acre-feet). If mine pit dewatering supplies less than 2,420 acre-feet, the shortfall will necessarily be pumped from the West Well Field. In this event, drawdown will increase in the immediate vicinity of the well field. Despite continued pumping, overall impacts on water levels in the eastern portion of Lanfair Valley are expected to be negligible, given the substantial volume of



water in storage in the upper 100 feet of saturated alluvium.

### **Influence of Pit Dewatering on Groundwater Levels**

Water level declines attributable to pit dewatering to date are depicted in Figure 3.3-5 which shows water level contours for 1987 through 1988 and those for 1995 through 1996. Both the West Well Field and the mine pit area are shown. Water level declines of less than 23 feet occurred in the West Well Field monitoring wells whereas declines in the area near the mine pit area appear to be as much as 41 feet. The water level declines due to pit dewatering appear confined to the bedrock units near the mine pit area.

Groundwater elevations in the immediate vicinity of the mine pit area have decreased by over 100 feet since dewatering operations began, causing groundwater elevation contours adjacent to this area to migrate northward. As shown in Figure 3.3-5, this decrease in water level elevation does not appear to extend to any significant distance to the west, towards the West Well Field, or to the east, toward the eastern boundary of the Castle Mountain Mine site. However, groundwater elevation contours topographically upgradient and downgradient of the mine pit area exhibit more displacement, with elevation decreases of over 100 feet observed. This effect is most likely the result of the steep hydraulic gradient of the water table and areas of suspected greater permeability towards the north-northwest (Terracon, 1996).

The influence of projected mine pit dewatering on the local groundwater table has been estimated, as shown in Figure 3.3-5 (Terracon, 1996). The results indicate that

aquifer drawdown from pumping the mine pits will be restricted to the vicinity of the East Well Field, and would not result in a potential to affect Piute Spring. Utilization of pit water to supplement West Well Field water supply will further distribute pumping and minimize local drawdown effects in the Lanfair Valley aquifer.

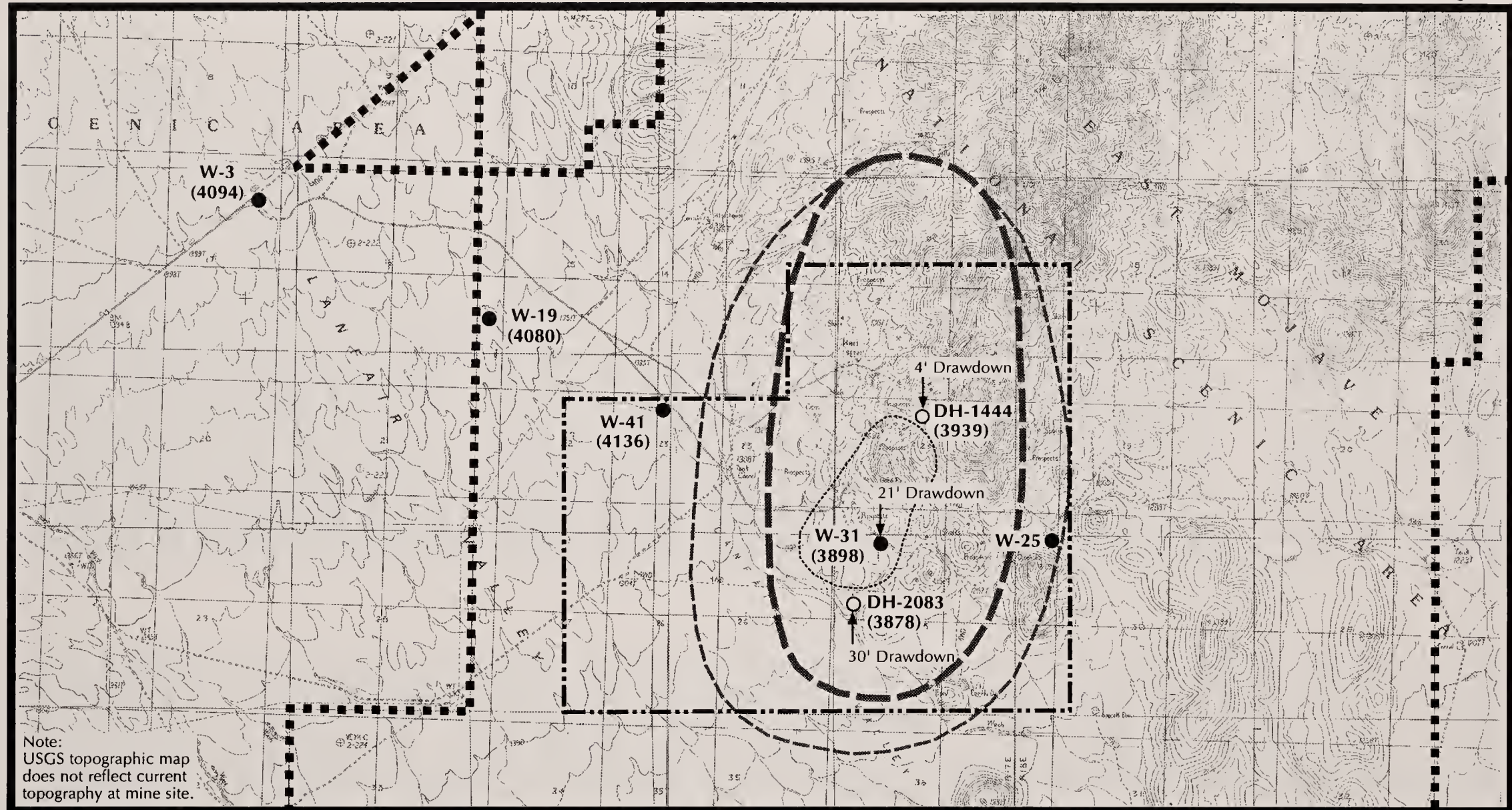
### ***Piute Spring Monitoring***

As shown in Table 3.3-1, Piute Spring has been monitored on a monthly basis since June of 1987. This monitoring has been conducted to establish baseline data for the spring flow and water quality conditions, which did not previously exist. The recorded data has been consistent for the nearly 10 years of monitoring.

The original conditions and stipulations (Condition 40b and Stipulation 13b) provided for monthly monitoring of Piute Spring through the third year of mine operation, with a subsequent schedule to be subject to subsequent agreement. Having provided the required baseline data plus an additional 4 years' monitoring data, the Applicant has requested to reduce the monitoring schedule from monthly to twice-yearly. The distance of Piute Spring from the pumping source is approximately 16 miles. At this considerable distance, the measurable rate of drawdown would be detectable by twice-yearly monitoring. In addition, since this monitoring is not part of the monitoring system designed to track project effects on the Lanfair Valley aquifer, a reduced schedule would not jeopardize Piute Spring.

***Mitigation Measures:*** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions

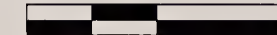




### Legend

- Monitoring Well
- Exploration Drill Well
- 4136 Groundwater Elevation
- Mine Site Boundary
- Viceroy Claims Boundary
- Approximate Boundary of mine pits area
- Radius of Influence from Mine Pit Dewatering (1995-1996)
- Estimated Radius of Influence after 15 Years of Mine Pit Dewatering

0 5,000



Scale: 1"=5,000 Feet

Map Prepared By:  
 Lilburn Corp., 1996

Data Source:  
 Terracon, 1996  
 All Locations are Approximate

Base Map:  
 USGS, 1984



## Mine Pit Dewatering Radius of Influence

**LILBURN**  
 CORPORATION

CASTLE MOUNTAIN MINE  
 San Bernardino County, California

Figure 3.3-5



of Approval and BLM Stipulations. These measures have been implemented and monitored for effectiveness. Continued implementation of the following measures would adequately address potential water impacts for the Mine Plan Amendments, reducing them to a less than significant level.

### COUNTY CONDITIONS OF APPROVAL

39. Project water requirements shall be minimized by the following operational procedures:

- a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.
- b. Employing drip irrigation to distribute solution directly to the heap leach surfaces. [FEIR 4.1.5.4.]

These measures are implemented on a continuous basis. Additional water conservation has been achieved by storage of solution in tanks.

40. Groundwater Monitoring: The Applicant shall comply with the "Plan for Groundwater Monitoring and Contingency Water Supply" (August 1990) which requires that:

- a. Two additional groundwater monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.

These wells are in place.

- b. Water levels in monitor wells W-3, W-19, W-37, W-38, and PS-2 and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are monitored during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Applicant.

These wells have been monitored monthly through 6 years of operation.

- c. In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation.

This contingency measure has not been needed and, therefore, not implemented.

- d. In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and other information shall be submitted to BLM for its consideration and decision respecting additional mitigation measures, if any.

This contingency measure has not been needed and, therefore, not implemented.

- e. BLM's decision respecting proposed additional mitigation actions (if any) arising from the reevaluation shall be circulated for public review and comment prior to implementation.

No additional mitigation actions have been necessary.

- f. If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan. [FEIR 4.1.5.1.]

This contingency measure has not been needed and, therefore, not implemented.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

41. Groundwater extraction shall be recorded at each well with flow meters. [DEIR p. 6.3-2.]

Flow meters are in place.

42. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Applicant shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIR p. 6.3-2.]

Groundwater drawdown has been limited to the immediate vicinity of the West Well Field.

#### BLM STIPULATIONS

12. Project water requirements shall be minimized by the following operational procedures: [FEIS Section 4.1.5.4.]

- a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.
- b. Employing drip irrigation to distribute solution directly to the heap leach surfaces; use of sprinkler systems during the operational phase of each leach pad is prohibited.

These measures are implemented on a continuous basis. Additional water conservation has been achieved by storage of solution in tanks.

13. The Operator shall comply with the "Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring" (August 1990) which requires: [FEIS Section 4.1.5.1.]

- a. Two additional groundwater monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.

These wells are in place.

- b. Water levels in monitor wells W-3, W-19, W-37, W-38, and PS-2 and stream flows at

Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are monitored during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Operator.

These wells have been monitored monthly through 6 years of operation.

- c. In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation.

This contingency measure has not been needed and, therefore, not implemented.

- d. In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and other information shall be submitted to BLM for its consideration and decision as to whether additional mitigation measures are necessary.

This contingency measure has not been needed and, therefore, not implemented.

- e. BLM's decision as to whether additional mitigation measures are necessary, such as the provision of supplemental source of water for Piute Spring to ensure no adverse impacts to riparian habitat, shall be circulated for public review and comment prior to implementation.

No additional mitigation actions have been necessary.

- f. If water level declines in monitor well W-37 exceed the drawdown predicted by the



hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Operator shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan.

This contingency measure has not been needed and, therefore, not implemented.

14. Groundwater extraction shall be recorded at each well with flow meters. [DEIS p. 6.3-2.]

Flow meters are in place.

15. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Operator shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIS p. 6.3-2.]

Groundwater drawdown has been limited to the immediate vicinity of the West Well Field.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no changes to water resources beyond the continued operation of the mine.*

The Castle Mountain Mine would continue to operate through the year 2000. Drawdown of the Lanfair Valley aquifer would be restricted to northern Lanfair Valley within predicted limits. Piute Spring would not be affected.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The impacts to surface and groundwater from this alternative would not differ substantially from those of the Proposed Action.*

The South Overburden Site Expansion Alternative would provide for continued operation of the Castle Mountain Mine for the same period as the Proposed Action. Anticipated water use would be similar to the Proposed Action, although longer haul roads would nominally increase the demand for dust control. As for the Proposed Action, drawdown of the Lanfair Valley Aquifer would be restricted to northern Lanfair Valley. Piute Spring would not be affected.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

### Impact 3.3-2: Surface and Groundwater Quality

**PROPOSED ACTION:** *The Proposed Action would result in the generation of additional ore and overburden, which could affect surface or groundwater quality. Open mine pits may intercept groundwater.*

Mining wastes are regulated by Article 7 of CCR Title 23 Chapter 15, which requires that wastes be characterized with respect to their potential to degrade water of the state. Geochemical components of the characterization include evaluating:

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- The potential for ore and overburden to generate acidic runoff due to the oxidation of sulfide minerals.
- The concentration of metals in ore and waste rock that could become available to the environment.

In addition to ore and overburden, rock in the pit walls must also be considered since the pit walls are also subject to oxidation and weathering processes similar to the overburden and heap leach piles. The rock that would remain in the Oro Belle-Hart Tunnel and Jumbo pit walls would essentially be the same material as the overburden that would be excavated. A small amount of ore-type rock would also remain exposed in the final mine pit walls.

Samples of the various types of materials that would be encountered during mining were analyzed for acid generating potential and acid neutralizing potential. A summary of acid generating potential results is provided in Table 3.3-4. Concentrations of metals were also analyzed; results for this analysis are summarized in Table 3.3-5.

#### ***Acid Generation Potential***

Acid generating potential was evaluated utilizing generally accepted static testing procedures that estimate: (1) the amount of acid that could possibly be generated by weathering of sulfide minerals in the sample; and (2) the amount of acid that other minerals in the sample are capable of neutralizing (Hutchinson and Ellison, 1992). Results are expressed as a ratio of neutralization potential (NP) to acid generating potential (AP). A ratio greater than 1.0 indicates that, based solely on the quantity of minerals in the sample, there is a net potential to neutralize

acid, and therefore, acidic conditions would not be expected. An NP:AP ratio of approximately 3.0 is generally accepted as a conservative indication that acid generation cannot occur, even in a humid climate. In arid climates, lower values are often used (e.g., the State of Nevada Division of Environmental Protection uses 1.2 as a guideline for requiring further testing). Because the rate of possible acid production and acid neutralizing reactions is not considered in static testing, results are interpreted conservatively.

As shown in Table 3.3-4, the NP:AP ratio of all of the remaining material to be encountered is over 1.0, indicating little or no potential to generate acid. No sulfur acid generating potential is detected in overburden materials. The processed ore (with its ratio of 8.0) has an NP:AP ratio well above the conservative value of 3.0, and would not have potential to generate acidic water conditions. Raw ore, in isolation (with its NP:AP ratio of 2.7), is in the conservative 3.0 value range, and above the 1.0 value where acidic conditions would be expected. The degree to which the raw ore remaining in the pit walls could have the potential to reduce the pH of water is dependent upon the actual geologic characteristics that ultimately occur in the pit floor, the amount of ore, the net neutralization potential of surrounding overburden, and the availability of water. Existing data indicate little potential for acid producing conditions.

Groundwater encountered in the Lesley Ann Pit at elevation 3,920 is similarly exposed to raw ore and has not resulted in low pH values, as shown in Table 3.3-3. Expanded pits under the Proposed Action would intercept this depth at the Jumbo and Oro Belle deposits. Conditions similar to those shown in Table 3.3-3 are expected.



**TABLE 3.3-4  
SUMMARY OF ACID-BASE ACCOUNTING**

Material Type	Numbers of Samples	Average Reported Results		
		Total Sulfur Acid <sup>(1)</sup> Generating Potential (AP) (tons CaCO <sub>3</sub> /kt)	Acid Neutralizing <sup>(1)</sup> Potential (NP) (tons CaCO <sub>3</sub> /kt)	NP:AP
Overburden				
	Oro Belle: (3)	ND <sup>(2)</sup>	3.8	-
	Hart Tunnel: (4)	ND	4.1	-
	Jumbo: (5)	ND	3.2	-
Weighted Average	-	ND	3.6	-
Raw Ore <sup>(3)</sup>	(2)	1.9	5.3	2.7
Leached Ore	(2)	<0.3	2.4	8.0

NOTES: (1) EPA Method 600-12-78-054  
 (2) ND - Not detected  
 (3) Agglomerated at ratio of 9 tons of leach grade ore to 1 ton of mill grade

### ***Metal Concentrations***

Table 3.3-5 compares total and soluble metal concentrations from ore samples to the California Soluble Threshold Limit Concentration (STLC) for hazardous waste. Although overburden and leached ore residue are categorically exempt from regulation as a hazardous waste by state and federal laws, the STLC criteria provide a measure of significance for evaluation of metals analysis results.

The State of California has determined that waste material with metals contents exceeding these values pose a substantial threat to health and the environment and, therefore, unless exempted, must be disposed of in accordance with stringent hazardous waste regulations.

As shown in Table 3.3-5, soluble metals in the materials are non-detectable for most metals. None of the results exceed STLC limits.

Due to the low metal concentrations, the extremely dry site environment, and the net neutralizing potential of the ore and waste rock, the geochemistry of materials that would be mined under the Proposed Action would not pose a threat to surface or ground water quality. Based on these geochemistry testing results, it is anticipated that the overburden and the rinsed and abandoned leached ore residue would be classified as a Group C mining waste pursuant to Title 23 CCR Chapter 15, Section 2571.

Because of the low soluble metal concentrations and the high NP:AP ratio of ore and overburden that would remain in the mine pit walls, it is expected that the quality of any water that could collect in the mine pits would be good (comparable to natural surface runoff) and similar to that shown in Table 3.3-3. This water would be suitable for wildlife use.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

<b>TABLE 3.3-5 SUMMARY OF METALS ANALYSES RESULTS AND COMPARISON TO REGULATORY THRESHOLDS</b>										
Constituents	Ore (mg/liter)					Leached Ore	Overburden			Regulatory Criteria STLC
	Jumbo Mill Grade	Jumbo Leach Grade	Hart Tunnel Leach Grade	Oro Belle Mill Grade	Oro Belle Leach Grade		Jumbo	Oro Belle	Hart Tunnel	
Antimony	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	15.
Arsenic	0.46	0.74	ND	ND	ND	<0.06	ND	ND	ND	5.0
Barium	ND	0.22	1.7	1.4	1.8	<0.20	ND	ND	ND	100.
Beryllium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	0.75
Cadmium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	1.0
Chromium	1.6	1.7	ND	ND	ND	<0.05	ND	ND	ND	560.
Cobalt	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	80.
Copper	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	25.
Lead	ND	ND	0.11	0.10	0.10	<0.05	ND	ND	ND	5.0
Mercury	ND	ND	ND	ND	ND	<0.0005	ND	ND	ND	0.2
Molybdenum	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	350.
Nickel	1.2	0.93	ND	ND	ND	<0.06	ND	ND	ND	20.
Selenium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	1.0
Silver	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	5.0
Thallium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	7.0
Vanadium	ND	0.18	ND	ND	ND	<0.05	ND	ND	ND	24.
Zinc	ND	ND	ND	ND	ND	<0.5	ND	ND	ND	250.

NOTES: All metals reported above are in mg/liter on a filtrate basis (STLC). Samples analyzed in accordance with EPA's Method 1312 EP Toxicity Test, 18-hour extraction.

Leached ore sample was a composite of crushed material from April-June 1996.

STLC: Soluble Threshold Limit Concentration

ND: None Detected



**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented as part of the ongoing mine operation. They are monitored regularly for both implementation and effectiveness.

Continued implementation of the following measures would adequately address potential water quality impacts for the Mine Plan Amendments.

#### COUNTY CONDITIONS OF APPROVAL

45. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIR p. 6.3-2; (See also Condition of Approval No. 30 above concerning capacity of containment area).]
46. The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including:
  - a. Impermeable synthetic liners for process solution basins and heap leach pads.
  - b. Sealed drainage and collection facilities to transport or contain leaching solution.
  - c. Diked leach pads to confine and control drainage from the leach piles.
  - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and draindown of solution leach system to preclude entry of storm run-off into the system.
  - e. Drainage or diversion ditches outside the heap from the leach pads in the event pumps could not operate because of a power failure.

- f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.
- g. Regularly prepared monitoring reports on the current status of operations.
- h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion. [DEIR 6.3-1.]

A permit from the RWQCB has been acquired (refer to Appendix G). This permit may need to be amended for approved/continued operations).

47. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion. [DEIR 6.3-2.]

#### BLM STIPULATION

3. The Operator shall meet all of the requirements of the Regional Water Quality Control Board's ("RWQCB") Waste Discharge Order and make all monitoring data available to the BLM upon request.

Such requirements have been met, as reported in annual monitoring reports.

**Additional Mitigation Measure 3.3-2a:** Should groundwater discharge into the mine pits, creating a water body that would remain following mine closure, measures shall be taken to assure that there will be no degradation of such water that could adversely affect human health or terrestrial and avian life. Under such a circumstance, the following measures shall be implemented:

- a. Monthly monitoring shall be completed during reclamation and closure to confirm the concentrations of metals and other constituents.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- b. Should the monitoring results indicate that concentrations of constituents exceed, or could likely exceed in the future, a federal or State maximum contaminant level (MCL) that could cause an effect to human or animal health, backfilling of the mine pit floor shall be completed to an elevation above the high water level. Backfill rock shall have a high neutralization potential (NP:AP ratio greater than 5.0).

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no additional potential for impacts to surface and groundwater quality beyond completion of the approved operation.*

As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Ore and overburden previously analyzed in the Previous EIS/EIR showed high neutralization potential, and low metals concentrations. Data shown in this EIS/EIR (refer to Tables 3.3-3, 3.3-4, and 3.3-5) confirm these expectations. No significant adverse impacts would occur.

**Mitigations Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would not differ from the Proposed Action in its potential to impact surface and groundwater quality.*

Disposing of the overburden in an alternative onsite location as proposed under this alternative would not change the characteristics of the ore and overburden or the potential water quality impacts from those described and evaluated for the Proposed Action.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.3-3: Surface Water Drainage and Diversions

**PROPOSED ACTION:** *Surface waters draining through the site could affect the expanded heap leach pad and stormwater solution storage basins.*

Existing facilities at the Castle Mountain Mine that could potentially be damaged by storm waters are located outside of defined flood plain areas. Primary facilities of concern include the heap leach pads, solution storage facilities, comminution circuit and gold processing plant, where chemicals are used.



The Proposed Action would expand the heap leach pad northwesterly. Additional storm-water basins would be constructed south of the existing basins. As shown in Figure 3.3-6, the northern portion of the heap leach pad is located outside of areas that could be affected by storm flows, even from a major event such as a 100-year storm. Stormwater diversion structures would be used where necessary, such as at the northern limits of the heap leach pad.

The Proposed Action would increase the mine pit area by 170 acres; this acreage would be reduced to 175 acres in Phase II of the mine when backfilling over 140 acres of the Lesley Ann pit would be completed. As shown in Figure 3.3-6, the mine pits are located at the head of a small drainage, and therefore would not capture substantial surface water flow. However, precipitation falling over this area, when it occurs in sufficient amounts, would not flow offsite, but would remain in the pit area where it would enter the aquifer through rock fractures. As the expanded mine pits would occupy a very limited part of the Lanfair Valley drainage area (0.1 percent) there would be no significant reduction of surface flows.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. They are monitored regularly for both implementation and effectiveness.

Continued implementation of the following measures would adequately address potential surface water impacts for the Mine Plan Amendments.

## COUNTY CONDITIONS OF APPROVAL

43. The heap leach piles shall be located to avoid disruption of the large drainage that passes through the western portion of the project site. Minor drainages that would be restricted by heap pad construction shall be diverted around the heap piles. Facilities shall be located to avoid major drainages. [DEIR p. 6.3-2, and FEIR at p. S-10.]
44. The Applicant shall obtain a Section 1603 permit from the California Department of Fish and Game before altering any stream channels. [DEIR p. 6.3-1.]

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no changes in the approved operation.*

**Mitigation Measures:** No additional mitigation would be necessary.

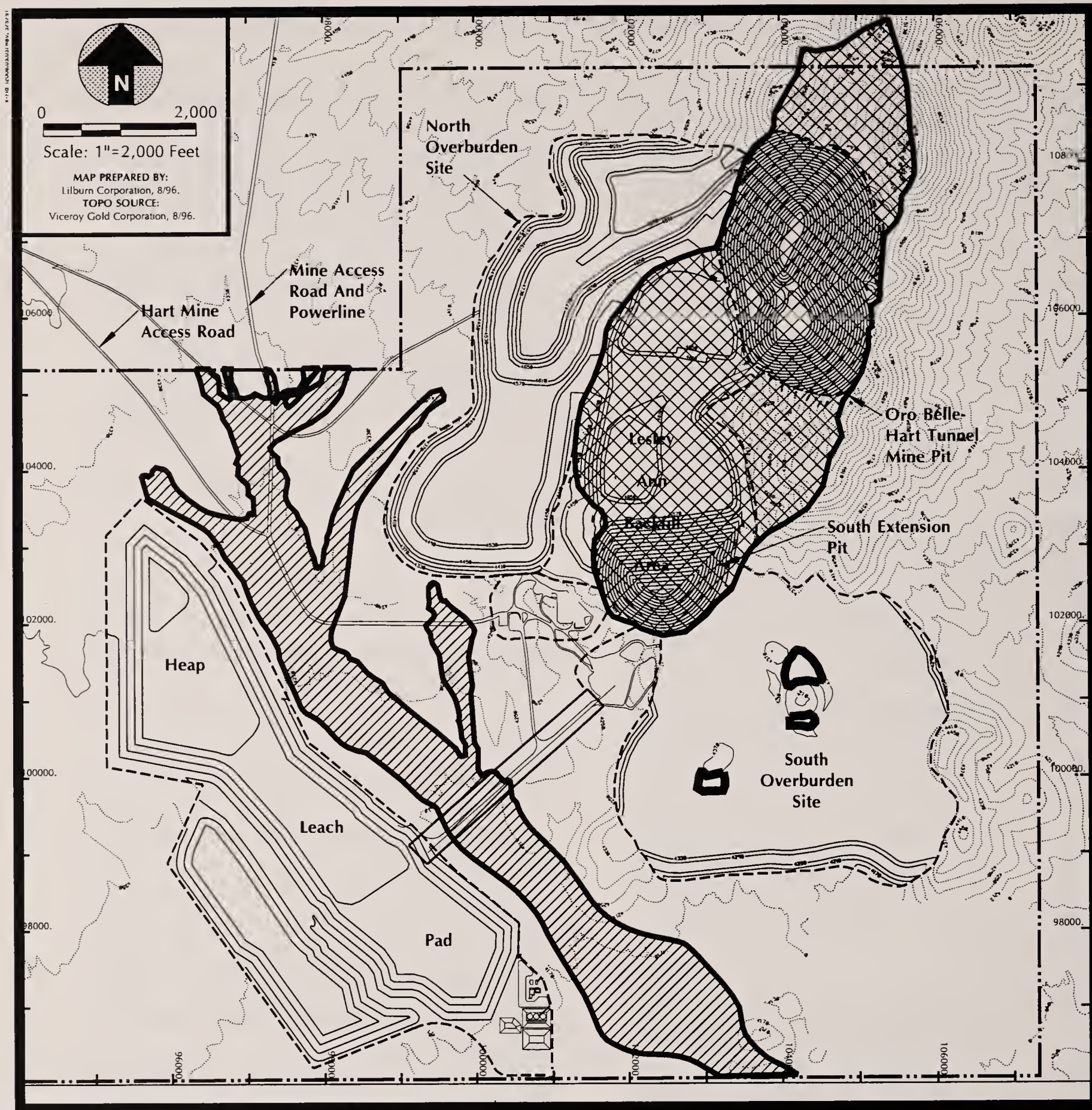
**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would not differ in effects from the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.





## Legend

- |  |                     |  |                            |  |  |
|--|---------------------|--|----------------------------|--|--|
|  | Existing Topography |  | Amended Mine Site Boundary |  | 100-Year Flood Plain                               |
|  | Roads               |  | Proposed Contours          |  | In-Pit Flow Catchment Basin                        |
|  | Major Facilities    |  |                            |  | Infiltration Basin<br>(South Overburden Site Only) |

## In-Pit Catchment Area and 100-Year Flood Plain

LILBURN  
CORPORATION

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 3.3-6



### 3.3.3 Cumulative Impacts and Mitigation Measures

The Proposed Action would result in the extension of the life of the Castle Mountain Mine and would collectively increase the total water requirements over the mine life. However, Piute Spring would not be affected by the continued water use.

The existing mine does not pose a hazard to groundwater quality and would not result in significant changes to surface water drainage patterns. No cumulative effects to water resources would therefore result in combination with the Proposed Action.

*Mitigation Measures:* No additional mitigation would be necessary.

*Level of Significance:* Less than significant.

### 3.3.4 Residual Adverse Effects

**PROPOSED ACTION:** The Proposed Action would result in temporary lowering of the Lanfair Valley aquifer. This impact is less than significant.

**NO ACTION ALTERNATIVE:** Since the No Action Alternative would result in no changes to the currently permitted operations, there would be no residual adverse effects.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** This alternative would have similar effects as the Proposed Action. No significant residual effects are expected.





## **SECTION 3.4**

### **VEGETATION**

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## 3.4 VEGETATION

### 3.4.1 Affected Environment

#### Introduction

This description of the affected environment is based on accumulated information on plant communities and assemblages, sensitive plants, study of aerial photographs, and field studies of the mine site and surrounding areas from the Previous EIS/EIR in addition to supporting studies, and from field verification reviews completed for this EIS/EIR.

#### Regional Vegetation

Vegetation in this region of the Mojave Desert, including Ivanpah, Piute, and Lanfair valleys, is characterized by four plant communities:

- Creosote bush scrub
- Joshua tree woodland
- Blackbush scrub, and
- Pinyon-Juniper woodland

The creosote bush scrub community occurs on the valley floor and lower slopes of alluvial fans, generally below elevations of approximately 4,000 feet. Common species of this community include the creosote bush (*Larrea tridentata*), Mojave Yucca (*Yucca schidigera*), mormon tea (*Ephedra nevadensis*), and fiddleneck (*Amsinckia intermedia*). Desert washes in this community support additional species, the most common being the catclaw acacia (*Acacia greggii*) and desert willow (*Chilopsis linearis*). The creosote bush sometimes grows in a clonal form which, over time, creates a ring. Carbon dating has shown that some of these rings may be hundreds or even thousands of years old (Vasek, 1980).

At elevations of approximately 4,000 feet, creosote bush scrub often occurs as an understory to the Joshua tree (*Yucca brevifolia jaegeriana*). Joshua tree woodland occurs on gentle slopes with loamy to clayey soils at elevations between approximately 3,700 and 4,400 feet in northern Lanfair Valley. The most visible plant in this community is the Joshua tree which is a member of the agave family. The trees can reach heights of 10 to 30 feet and are scattered, with shrubs and herbs between. Other common species in this community include matchweed (*Gutierrezia microcephala*), cheesebush (*Hymenoclea salsola*), staghorn cholla (*Opuntia acanthocarpa*), and the Mojave Yucca. Average densities of Joshua trees and Mojave Yuccas in this area are estimated at greater than 20 plants per acre for each species. The densities of both species decrease sharply on steeper slopes and at higher elevations.

The blackbush scrub community is dominated by blackbush (*Coleogyne ramosissima*). This plant community overlaps the Joshua tree woodland and occurs at elevations above approximately 4,200 feet on gentle slopes of the upper alluvial fans. Other common species include matchweed and desert trumpet (*Eriogonum inflatum*). Also common in this community are several species of the Cactaceae family: pancake prickly pear (*Opuntia chlorotica*), buckhorn cholla (*Opuntia acanthocarpa coloradensis*), and the barrel cactus (*Ferocactus cylindraceus*).

Isolated areas of the pinyon-juniper woodland community occur on hills in northern Lanfair Valley (such as near Barnwell) where elevations reach approximately 5,200 feet. This community, which also occurs in small pockets in the vicinity of Hart Peak and the Castle Peaks, becomes extensive in the higher



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

New York Mountains. Common species include the single-needle pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*).

A riparian (or water-related) plant assemblage occurs at Piute Spring, located at the southeastern limit of Lanfair Valley (approximately 12 miles from the mine site). This riparian woodland is similar to the Colorado River bottomland woodland which occurs on the lower Colorado River along the California-Arizona border. The overstory is dominated by willow (*Salix gooddingii*) and cottonwood (*Populus fremontii*). Common understory species include mule fat (*Baccaris glutinosa*) and California bulrush (*Scirpus californicus*). Riparian areas are classified by the California Desert Conservation Area (CDCA) Plan as highly sensitive Unusual Plant Assemblages (UPAs). The Piute Creek area is such a UPA.

Most of the floor of the Lanfair Valley is covered by an understory of grasses. These grasses typically occur on well-drained soils within the Joshua tree woodland community.

The floristic composition of grasslands was determined by a number of factors including edaphic and climatic variability, the influence of past and present grazing, and the influence of homesteading. Under the Homestead Act of 1865, inhabitants were required to "improve" parcels of property for agricultural purposes. These improvements included clearing, blading, and tilling operations. In addition, the Lanfair Valley and surrounding areas are presently being grazed, and have been for decades.

Past surface disturbance associated with historic mining in Hart, and fire have also

been major factors in determining the composition of grasslands. Grassland UPAs, within Joshua tree woodlands, are likely created by fire which kills the Yucca species that occur in the area.

Native species showing the highest densities are big galleta (*Pleuraphis rigida*), fluff grass (*Erioneuron pulchellum*), and muhlenbergia (*Muhlenbergia porteri*). Desert grassland was classified by BLM as one of 13 UPAs within the EMNSA (BLM, 1980). UPAs were designated in the CDCA Plan as unusual based on one or more conditions, including restricted habitat, discontinuous distribution, age, size, or density. Each UPA is assigned a sensitivity rating which is based on its ability to recover from habitat disturbance. The scale of sensitivity ranges from "highly sensitive" to "very sensitive" to "sensitive" to "subject to disturbance but not as sensitive." The Lanfair Valley desert grassland UPA is classified as "subject to disturbance, but not as sensitive" (BLM, 1988). This designation reflects the grassland's ability to recover following disturbance. Desert grassland UPA covers approximately 200,000 acres of federal-, state-, and privately-owned lands in Lanfair Valley.

#### Mine Site Vegetation

Vegetation surveys were completed in 1990, 1991, and 1996 on the existing flora within and adjacent to the Site Boundary. The sites surveyed include:

- The Hart townsite, former roads, and building sites
- Overburden piles accumulated from the South Clay Pit
- Undisturbed by current mining, but grazed onsite grassland



- Undisturbed by current mining, but grazed Joshua tree woodland onsite
- Onsite slopes with blackbush
- Future sites of heap leach pads
- Overburden storage site locations
- Potential locations of onsite buildings and roads

Vegetation of the mine site consists of the described common plant communities of Lanfair Valley and the Mojave Desert: Joshua tree woodland, Mojave creosote bush scrub, and blackbush scrub. Figure 3.4-1 shows the distribution of plant communities on the mine site. Desert grasses occur as an understory to the Joshua tree woodland/creosote bush scrub on the valley floor in the area of the heap leach pads. Joshua tree woodland and blackbush scrub are the dominant plant communities. Elements of the creosote bush scrub overlap the Joshua tree woodland at lower elevations, such as in the area of the West Well Field and along the westerly portion of the mine access road. Perennial plant cover on the site is commonly 10 to 15 percent.

Vegetation along the mine access road (in northern Lanfair Valley and the western margin of Piute Valley) is dominated by the Joshua tree woodland and creosote bush scrub communities.

### Special Status Species

Special-status plant species are offered legal protection under the federal Endangered Species Act or the California Endangered Species Act. Databases indicating plant species of special interest are available. The list of plant species known or expected to

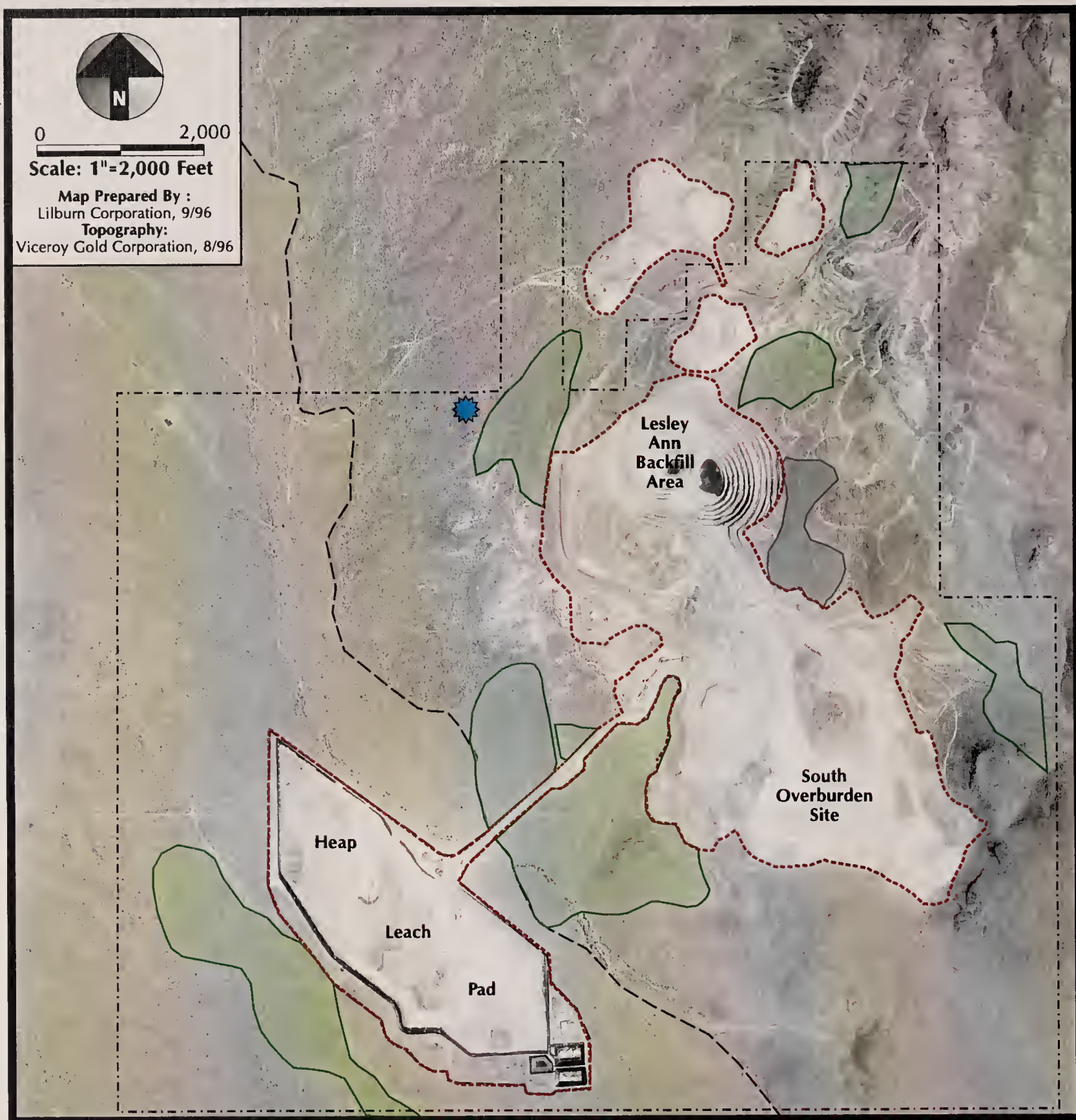
occur in the mine site area was reviewed in conjunction with the following:

- **Federal Register Listing:** US Fish and Wildlife Service (FWS) is responsible for implementing the Federal Endangered Species Act. On February 28, 1996, the USFWS revised their status classification system eliminating the Category 1, 2, 3 Candidate designation. Although these species no longer have the candidate designation, they are unofficially classified as species of concern.
- **California Natural Diversity Data Base (CNDDDB):** California Department of Fish and Game (DFG) provides current legal status and geographic coordinates for species of concern.
- **Bureau of Land Management (BLM) List:** Incorporates federal and state lists, and some organizational listed species.
- **California Native Plant Society Inventory:** California Environmental Quality Act (CEQA) guidelines support organizational lists for species which meet state list criteria.

Based on the database and information collected on vegetation onsite, literature reviews on the distribution of species that occur in the vicinity, and confirmation with the California Natural Diversity Database (CNDDDB), no listed plant species occur on, or in the vicinity, of the site.

The potential for the existence onsite of *Penstemon stephansii*, a former federal category 2 species and a California Native Plant Society Category 1B species was identified in the Previous EIS/EIR.





## Mine Site Plant Communities

CASTLE MOUNTAIN MINE  
San Bernardino County, California

**Figure 3.4-1**



Detailed botanical surveys conducted over a several year period have found that a subspecies of *Penstemon bicolor* (not *Penstemon stephansii*) is present on the site. This species is listed as threatened in Nevada, but not listed in California and is the single special interest species of concern at the site. During 1995, the plant was found in bloom as far south as Piute Spring and 3 miles north of the mine site. In May 1996, over 650 individual plants were located along a 0.9 mile stretch of the road where the initial population was discovered.

Several more individuals were found in the valley near Hart Tunnel. Seed is collected annually from plants located on- and off-site. Seed was collected from the North Clay Pit in February 1995 and used to grow plants in the greenhouse.

### Unusual Plant Assemblages/Species

These plant assemblages/species are considered rare or "sensitive" by federal, state agencies, and/or the scientific communities, although not offered legal protection under federal and/or state Endangered Species Acts. UPAs, as defined by the BLM, were designated in the CDCA Plan based on one or more conditions, including restricted habitat, discontinuous distribution, age, size, or density.

There are two unusual plant assemblages/species that occur on the mine site.

#### 1. Creosote Bush Rings:

Creosote bush is the most common shrub throughout the Mojave Desert. Over time, creosote bush may grow in a clonal form which creates a ring with later growth expanding radially from the main center

point. The presence of such rings indicate older plants; in some cases, they may be centuries old.

Field surveys identified the occurrence of five creosote rings in the northern portion of the site, as shown in Figure 3.4-1. The 10-to 15-foot diameter of these rings indicate maximum ages of several hundred years.

#### 2. Lanfair Valley desert grassland UPA:

Approximately 1,000 of the 200,000-acre Lanfair Valley desert grassland UPA occurs on the lower portions of the site. Figure 3.4-1 shows the distribution of this community on the mine site.

### 3.4.2 Environmental Consequences and Mitigation Measures

Potential impacts to vegetation and plant species from the mine plan amendments are addressed in this section. These impacts are generally as follows:

- Impacts to vegetation as a result of proposed modifications to the mining operations;
- Impacts to unusual plant species/assemblages; and
- The potential for establishment of exotic or invasive species in disturbed areas.

### Standards of Significance

The Proposed Action would be considered to have a significant vegetation impact if it results in:

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- 3.4A A substantial reduction in the population of a special status species;
- 3.4B A substantial reduction in habitat plant species, and vegetative cover;
- 3.4C Removal of any wetland/riparian habitat;
- 3.4D Loss of adequate water supply to wetland or riparian habitat.

#### **Impact 3.4-1: Native Plant Community Disturbance**

**PROPOSED ACTION:** *The proposed modifications to existing operations would result in the direct removal of plants on an additional 490 acres.*

The direct removal of vegetation would result from: (1) expansion of mine pits; and (2) creation and expansion of other mine facilities, including the creation of the North Overburden Site, expansion and consolidation of the heap leach pad, and miscellaneous removal for haul routes, nurseries, and basin areas.

The Proposed Action would result in some additional construction activities and disturbance within the currently permitted boundaries. Portions of this area have already been disturbed by previous activities while other areas have not yet been affected by planned or potential construction. The distribution of the activities associated with the Proposed Action in relation to disturbed areas and remaining native plant communities in the existing permit area is shown in Figure 3.4-2. An additional 490 acres of vegetation would be removed.

The Proposed Action would include the development of the Oro Belle-Hart Tunnel and South Extension mine pits. The expansion of the mine pits would remove native plant communities including blackbrush scrub. These areas would be reclaimed, along with all other surface disturbance described herein in compliance with regulatory and environmental requirements, including SMARA.

The Reclamation Plan, which is described in detail in Section 2.2.8, includes extensive research in revegetation. The program is directed by a Viceroy staff member who holds a doctorate in ecology and uses both Viceroy employees and outside contractors for ongoing research. The results are reported annually in the Revegetation Report published each January. In order to support revegetation efforts at the mine site, Viceroy has constructed a greenhouse and several outdoor nurseries to provide plant material for revegetation. In addition, a seed collection program has been established to collect seed from local sources for revegetation. In 1995, 2,131 pounds of seed were collected from 42 species. The collected seed is stored in the seed storage building, adjacent to the greenhouse. Growth media continues to be salvaged and stockpiled.

Reclamation areas and treatments are shown in Table 3.4-1. Based on the expertise of the ecologist, experience on other sites, and ongoing research, the treatments are expected to successfully create habitat with native vegetation. However, recovery will take a long time; it could take decades for vegetation to reestablish to pre-mining conditions.



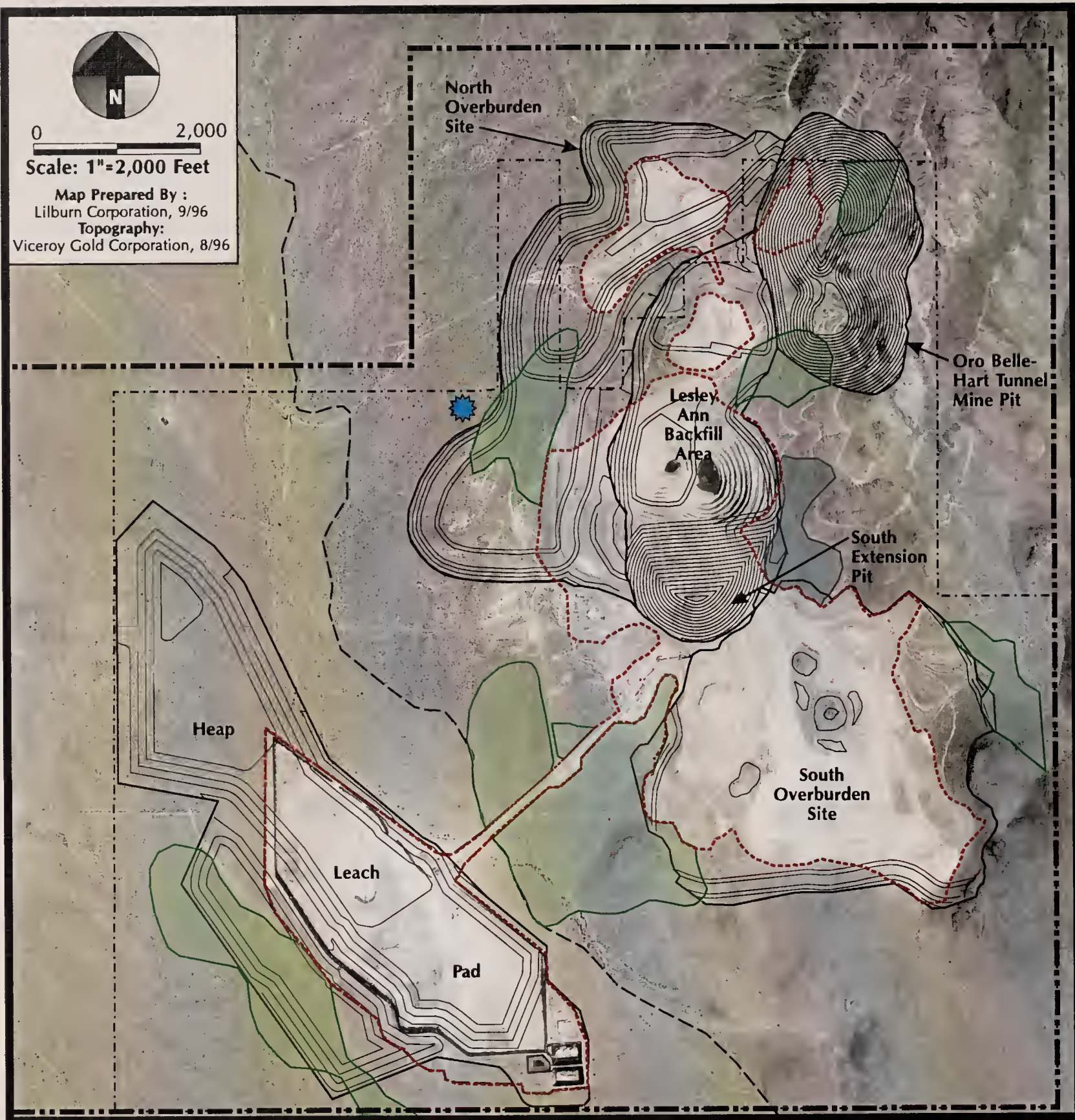
**TABLE 3.4-1  
RECLAMATION TREATMENT AND ACREAGES**

<b>Mine Areas</b>	<b>Surface Type</b>	<b>Disturbed Acres</b>	<b>Reclamation<sup>(1)</sup> Treatment</b>	<b>Non-Mine Pit (acres)</b>	<b>Mine Pit (acres)</b>
<b>Former Clay Mine Pits</b>	Rock walls, benches, floor, broken rock	<sup>(2)</sup> 0	Sequentially backfill with overburden. Place growth media and revegetate.	85	0
<b>Mining</b>	Rock walls, benches and floor	170	Rip floors and haul roads, place growth media, and revegetate pit floors and haul roads. Due to hard rock composition and steep angles associated with mine pits, benches and pit floors are the only possible areas to be successfully revegetated.	0	170
	Broken rock where backfilled	140	Sequentially backfill Lesley Ann and Jumbo Pits and partially backfill South Extension Pit. Place growth media, revegetate. Mine pit wall staining as necessary to reduce color contrast.	140	0
<b>Overburden</b>	Broken rock	525	Scarify haul roads. Grade faces to scallop surface. Place growth media, revegetate.	525	0
<b>Heaps</b>	Crushed and processed ore	420	Rinse heaps. Regrade slopes to 2.5:1. Place growth media, revegetate.	420	0
<b>Other<sup>(3)</sup></b>	Compacted earth	145	Scarify and revegetate	145	0
<b>Mined Total</b>		1,400	<b>Reclaimed Total</b>		1,315
					170 <sup>(4)</sup>

**NOTES:**

- (1) This table is only intended to show very generalized reclamation. Refer to Description of Proposed Action and Application for a complete description of reclamation activities.
- (2) Clay mine pit areas were disturbed and unreclaimed prior to Castle Mountain Mine operation. These areas are therefore not counted as areas disturbed by the mine. Reclamation of these areas is incorporated into the Castle Mountain Mine Reclamation Plan.
- (3) Includes growth media piles, nurseries, roads, buildings and parking areas, process basin areas.
- (4) Mine pit benches and floors will be revegetated, thereby reducing the unvegetated mine pit acreage (pit walls).





## Legend

- |       |   |  |                               |  |  |
|-------|---|--|-------------------------------|--|--|
| ----- | Amended Mine Site Boundary  |  | Existing Creosote Rings       |  | Joshua Tree Woodland<br><i>Includes Elements of:<br/>Creosote Bush-Yucca Schidigera/<br/>Joshua Tree-Creosote Bush Scrub/<br/>Boxthorn Scrub/Desert Wash</i> |
| ----- | Original Mine Site Boundary   |  | Desert Grassland UPA Boundary |  | Blackbush Scrub  |
| ----- | Existing Disturbed Areas<br><i>Excluding Haul Roads<br/>and Exploratory Roads</i> |  |                               |  | Desert Scrub   |
| ----- | Proposed Contours   |  |                               |  |  |

## Proposed Action Vegetation Impact



Because the mine pits are comprised primarily of rock walls with steep angles, benches and pit floors are the only possible areas within the pits that can be successfully revegetated. Although the Reclamation Program would meet regulatory and environmental impact requirements, the habitat value of the mine pits would be reduced, as compared with pre-mining conditions.

Expansion and consolidation of the heap leach pad, creation and expansion of the North Overburden Site, and miscellaneous disturbances would remove Joshua tree woodland, blackbush scrub, and desert grassland/creosote bush scrub/Joshua tree woodland.

The types of habitat to be affected, creosote bush scrub, Joshua tree woodland, and blackbush scrub communities, are abundant in Lanfair Valley (over 217,000 acres) and throughout the Mojave Desert. Construction and operation of the additional facilities would not cause regional declines of these communities or the associated plant species. However, it would add to 890 acres of surface disturbance already permitted. This additional removal would reduce the distribution of native plant communities on the mine site. In addition, this additional disturbance could accelerate erosion and contribute to visual quality degradation.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures are monitored regularly for effectiveness. Ongoing activities at the site include vegetation salvage, seed propagation and transplantation of salvaged plants,

revegetation research, and revegetation on portions of the site as mining operations are completed in those areas. Five years of research and revegetation work have led to greatly increased knowledge of revegetation for the site. Some areas have been planted with salvaged plants, greenhouse grown plants, and/or directly seeded. Some of these plants have survived in revegetation sites for 4 years to date. The ongoing revegetation program, in combination with the identified mitigation measures below would adequately address potential impacts to vegetation for the Mine Plan Amendments.

#### COUNTY CONDITIONS OF APPROVAL

48. Within one year the Applicant shall develop a revegetation research program based upon information provided by a qualified expert in desert flora. This research program shall include measures such as:
  - a. Review of available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.
  - b. Development of a research methodology and a schedule for implementation of the revegetation program for submittal to BLM and the County.
  - c. Revegetation success shall be determined by measuring the density and diversity of perennial species. The ten year goal for density, using only perennial species, will be 21% as compared to undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be 6% of the control. The 10 year goal for diversity will be 15% using only perennial species expressed as a similarity index of the control. The five year goal for diversity, based on a sigmoidal curve, will be 4%, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- plots located within areas representative of the reclaimed lands.
- d. Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall be initiated to determine where available soil would be most effectively used.
  - e. Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.
  - f. Selection of a site appropriate for a nursery. Considerations will include water availability, access, and other requirements determined by the revegetation experts.
  - g. A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. The goal will be to initiate revegetation procedures within six months following completion of project activities over an area.
  - h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the project site, a weed control program acceptable to the County and BLM shall be implemented.
  - i. Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.
  - j. Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.

- k. Ground preparation procedures shall include ripping and harrowing of compacted soils.

- l. Implementation of a 5 year monitoring program following project completion to verify revegetation results, based upon the goals for diversity and density. [DEIR p. 6.4-2; FEIR Section 4.4.4.2.]

The required revegetation plan has been prepared and implemented on the site.

- 49. Baseline vegetation measurements shall be completed as part of the revegetation research program prior to surface-disturbing activities. [FEIR Section 3.2.1.]

Baseline vegetation data was collected in 1991 and 1996.

- 50. Revegetation efforts shall be initiated as soon as practicable during the project operation period, as use of specific disturbed areas is completed. [DEIR p. 6.4-3.]

Revegetation of areas where mining activity is completed has begun.

- 51. The project revegetation program shall collect and provide data on revegetation and recovery of the onsite desert grassland unusual plant assemblages (UPA) and provide such data to BLM to supplement UPA monitoring and planning strategies. [DEIR p. 6.4-3.]
- 52. Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM. [DEIR p. 6.4-3.]
- 53. Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed, instead of bulldozed, to enhance recovery. [FEIR Section 3.2.1.]
- 55. Fencing shall be used to exclude livestock from revegetated areas until termination of the project and maturation of the revegetated areas, such that grazing can be accommodated. The Applicant shall be responsible for removing these fences



following reclamation, as determined by BLM. [DEIR p. 6.4-3.]

These measures have been incorporated into the Revegetation Plan.

### BLM STIPULATIONS

A list of stipulations was developed by the BLM for the existing mine as part of the previous project permitting process. The proposed modifications to the mining operations would also comply with these stipulations, identified below.

1. The Operator shall comply with all of the reclamation and other requirements set forth in the August 1990, Mine Plan and Reclamation Plan for the Castle Mountain Mine project (the "Reclamation Plan").

The Applicant has submitted a revised Reclamation Plan reflecting the proposed Mine Plan Amendments.

2. Before starting mining operations, the Operator shall post a \$619,000.00 letter of credit, cash, or security bond jointly with the County of San Bernardino ("the County") and the BLM, to ensure compliance with all the conditions of the Plan of Operations and Reclamation Plan. This bond amount shall be reviewed for adequacy at an initial review meeting, which shall take place as set forth in the Reclamation Plan, and thereafter at two year intervals. This bond amount shall be adjusted as set forth in detail in the Reclamation Plan. Portions of the bond shall be released to the Operator upon certification by the BLM and the County so that all reclamation conditions applicable to a given reclamation area have been complied with, as specified in detail in the Reclamation Plan. The County has agreed to administer the bond, subject to regulations No. 21(1)(2). Within 30 days following the release of the decision, the BLM, County, and the Operator will begin developing an agreement to design and implement the administrative bonding procedures.

The financial assurance amount is reviewed annually to reflect actual surface disturbance, planned disturbances over the next year, and reclamation completed. The principal amount of BLM/County surety bond currently in place is \$1,605,000. Reclamation costs through 1996 were projected at \$1,890,100.

The mechanism already in place for computing the annual adjustment in bonding required would continue to be used for the mine plan amendments.

17. The Operator shall obtain a Section 1603 permit from the California Department of Fish and Game before altering any stream channels.
20. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion in accordance with the Reclamation Plan.
21. Within one year of the approval of the plan of operation, the Operator shall develop a revegetation research program based upon information provided by a qualified expert in desert flora. This research program shall include, but not be limited to the following measures:
  - a. Review of all available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.
  - b. Development of a research methodology and a schedule for implementation of the revegetation program for submittal to BLM and the County.
  - c. Revegetation success shall be determined by measuring the density and diversity of perennial species. The ten year goal for density, using only perennial species, will be 21 percent as compared to undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be 6 percent of the control. The ten year goal for diversity will be 15 percent using only the perennial

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- species, expressed as a similarity index of the control. The five year goal for diversity, based on sigmoidal curve, will be 4 percent, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly distributed plots located within areas representative of the reclaimed lands.
- d. Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall be initiated to determine where available soil would be most effectively used.
  - e. Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent of the barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.
  - f. Selection of a site appropriate for a nursery. Considerations will include water availability, access, and other requirements determined by revegetation experts.
  - g. A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. The goal will be to initiate revegetation procedures within six months following completion of project activities over an area.
  - h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the project site, a weed control program acceptable to the County and BLM shall be implemented.
  - i. Employment of reseeding, transplantation, fertilization and watering procedures determined appropriate for each disturbed area in the program methodology.
  - j. Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.
  - k. Ground preparation procedures shall include ripping and harrowing of compacted soils.
  - l. Implementation of a monitoring program to verify revegetation results, based upon the goals for diversity and density:
- The required revegetation plan has been prepared and implemented on the site. The plan is included in the Mine Plan.
- (1) The revegetation bond for any specific area will not be released until the Operator demonstrates, based on a full 10 years of monitoring of the revegetation of that area, including at least one full year in which the vegetation is completely self-sufficient, that a density and diversity standards set forth in stipulation No. 21(c) have been met.
  - (2) Upon the completion of the monitoring period set forth in Stipulation No. 21(1)(1) for each specific area to be revegetated, the BLM/County shall determine the extent to which the density and diversity standards set forth in Stipulation No. 21(c) have been met. If the Operator has not met the standard for density, the BLM/County shall retain an amount from the reclamation bond equal to .5 percent of the funds allocated in such bond for such specific area for every .05 percentage point contained in such standard by which the Operator has not met such standard. If the Operator has not met the standard for diversity, the BLM/County shall retain an amount from the reclamation bond equal to .5 percent of the funds allocated in such bond for such specific area for every .05 percentage point contained in such standard by which the Operator has not met such standard. The balance of the funds contained in the reclamation bond and allocated to such specific area shall be returned to the Operator.



22. Baseline vegetation measurements shall be completed as part of the vegetation research program prior to surface disturbing activities.

Baseline vegetation data was collected in 1991 and 1996.

23. The Operator shall annually provide to the BLM a detailed description of the experiments performed and results achieved in connection with its revegetation research program and will further describe the progress of all revegetated areas.

- a. As a result of its review of the information provided by these reports, the County or BLM may adjust the revegetation standards.
- b. If the BLM determines that such adjustment is warranted, it will provide notice.
- c. By May 1 of the seventh and tenth years of mining operation, the BLM will issue a public notice of its determination as to whether or not adjustment of the revegetation standards is warranted, providing its rationale for this determination.

24. The Operator is contemplating the establishment of a Revegetation Review Committee. Within 30 days following receipt of all permits and approvals, the Operator shall advise the BLM of its decision regarding the establishment of a Revegetation Review Committee. If such a group is established, the Operator shall prepare a detailed plan describing the structure, membership selection procedures, and functions of the Committee that will be mutually agreeable to the BLM, the County, the Operator, California Division of Mines and Geology, and three representatives of the environmental community. The plan would incorporate the following:

- a. The Committee would consist of three technical experts, including an arid lands revegetation expert, a geologist/hydrologist and an arid lands ecologist; three representatives from the environmental community; and one representative each from the County, the BLM, the State Division of Mines and Geology, and the Operator.

- b. The Committee would confer annually to discuss the annual revegetation reports filed by the Operator, in order to: interpret the information contained in these reports; advise the County and BLM of actions they might take to increase the success of revegetation efforts and adjustments which should be made to the revegetation standards.

- c. The Committee would produce a written report by June 1 of each year.

- d. The Operator would make provision for the reimbursement of Committee members of the costs associated with the participation in the Committee.

The revegetation review committee has been formed and has acted in accordance with this stipulation.

25. Revegetation efforts shall be initiated as soon as practicable during the project operation period, as use of specific disturbed areas is completed.

This data has been collected and is on file.

27. Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM.

28. Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed, instead of bulldozed, to enhance recovery.

30. Road segment A of the Mitigated Access Route shall, to the extent possible, use the existing alignment of the YKL Ranch water pipeline maintenance road for access to Nevada State Route 164.

31. Fencing shall be used to exclude livestock from revegetated areas, such that grazing can be accommodated. The Operator shall be responsible for removing these fences following reclamation, as determined by BLM.

52. Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

period rather than deferring revegetation until operations are completed.

These measures have been incorporated into the Revegetation Plan.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional plant community impacts to the currently permitted mining operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Current operations have disturbed approximately 545 acres of vegetation. The mine is permitted, however, for 890 acres of disturbance.

Upon cessation of mining operations, the site would be reclaimed and revegetated in accordance with the Reclamation Plan. The Applicant has salvaged vegetation and collected seed; a green house has been constructed, and seedlings are being raised under varying conditions in preparation for revegetation. Planting and re-seeding has already been implemented on certain slopes, and on surfaces of the South Overburden Site.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The South Overburden Site Expansion Alternative would result in the direct removal of plants on 325 acres.*

As shown in Figure 3.4-3, this alternative would not affect any additional area in the North Overburden Site thereby reducing the additional surface disturbance, when compared to the proposed Action, from 490 acres to 325 acres.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to or less than those of the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

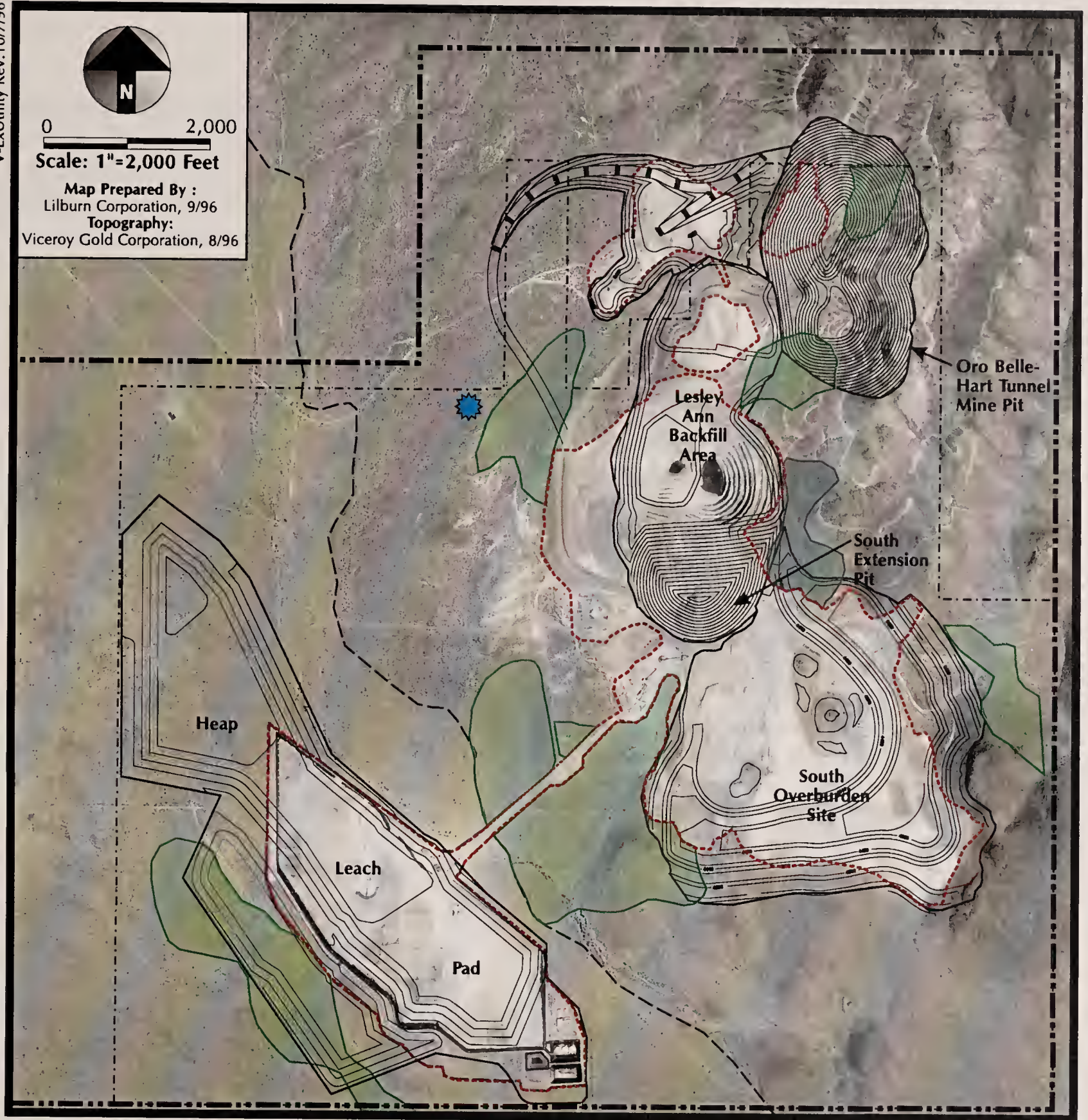
#### Impact 3.4-2: Special Status Species Disturbance

**PROPOSED ACTION:** *The Proposed Action would result in no additional impacts to special status species.*

As discussed in Section 3.4.1, *Penstemon stephensii*, a former federal Category 2 species and a California Native Plant Society Category 1B species, does not occur on, or in the vicinity of the mine site. A subspecies of *Penstemon bicolor*, not listed in California, is present on the site.

Since no special status plant species occur on, or in the vicinity of, the mine site, the Proposed Action would not result in impacts to special status species.





## Legend

- |           |   |   |                               |  |  |
|-----------|---|---|-------------------------------|--|--|
| — · — · — | Amended Mine Site Boundary  | ★ | Existing Creosote Rings       |  | Joshua Tree Woodland<br><i>Includes Elements of:</i><br><i>Creosote Bush-Yucca Schidigera/</i><br><i>Joshua Tree-Creosote Bush Scrub/</i><br><i>Boxthorn Scrub/Desert Wash</i> |
| - - - - - | Original Mine Site Boundary   |   | Desert Grassland UPA Boundary |  | Blackbush Scrub  |
| - - - - - | Existing Disturbed Areas<br><i>Excluding Haul Roads and Exploratory Roads</i> |   |                               |  | Desert Scrub   |
| —         | Proposed Contours   |   |                               |  |  |

## Proposed South Overburden Site Expansion Alternative Vegetation Impact



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

**Mitigation Measures:** No additional mitigation would be necessary.

County Condition of Approval No. 54 should be deleted, as no *Penstemon stephensii* occurs on the site.

~~**Condition 54/Stipulation 29:** Concerning the on-site location of the Stephen's Beardtongue (*Penstemon stephensii*) population the following measures shall be required: [FEIS Section 3.2.1]~~

- ~~a. Flag, fence, sign, or otherwise delineate the on-site population, or other discovered populations to ensure avoidance during project construction and operations.~~
- ~~b. Monitor the known population and other individuals/populations that are found during project operations.~~
- ~~c. If individuals do not appear elsewhere on-site, collect and broadcast seed from the known population to other on-site areas, or transplant individuals to another location, before reclaiming mine exploration drill.~~

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no additional impacts to special status species.*

As no special status species occur on the site, no impacts to special status species would occur.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The South Overburden Site Expansion Alternative would not result in any new impacts to special status species.*

There would be no impacts to special status species.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.4-3: Unusual Plant Assemblage Disturbance

**PROPOSED ACTION:** *The Proposed Action would result in the removal of a portion of the Lanfair Valley desert grassland UPA.*

The Proposed Action would result in the removal of Lanfair Valley desert grassland UPA, considered by the BLM to be a unique plant assemblage. This removal would be in conjunction with the expansion of the heap leach pads, growth media storage areas, process plant and roads, and stormwater basins. This would represent approximately 12 percent of the area of this community within the mine site and less than 0.6 percent of the UPA in the Lanfair Valley. This UPA is classified by the BLM (1988) as "subject to disturbance but not sensitive." Reestablishment of the heap leach piles may be slower than customary for surface disturbance recovery because it would be a new surface with low soil fertility. To date however, the heap leach piles are proving to be an excellent substrate for plant growth even without amendment.



The planned removal, storage, and replacement of growth media in these areas would, however, assist in heap leach pile reclamation. The success of re-establishment on the heap leach pile surface is currently being studied as part of the planned revegetation research project, in order to minimize the recovery time on the new surface.

**Mitigation Measures:** Surface disturbances in the UPA would be reclaimed in accordance with the Reclamation Plan. Ongoing revegetation research and implementation on the project site would adequately mitigate this impact. The following measure developed in the Previous EIS/EIR and subsequent approvals has been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations and monitored regularly for effectiveness. This measure, in combination with ongoing onsite revegetation efforts, would adequately address potential impacts related to disturbance of UPA for the Mine Plan Amendments.

#### BLM STIPULATION

26. The project revegetation program shall collect and provide data on revegetation and recovery of the onsite desert grassland unusual plant assemblages (UPA) and provide such data to BLM to supplement UPA monitoring and planning strategies.

This measure is being implemented on an ongoing basis as a part of revegetation research.

**Additional Mitigation Measure 3.4-3:** The North Overburden Site shall be constructed in such a manner as to avoid disturbing the creosote bush rings located in this vicinity.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not result in any additional impacts to unusual plant assemblages. As currently permitted, the Castle Mountain Mine, including the associated impacts to vegetation, would continue through the year 2000. Upon cessation of mining operations, the site restoration would be reclaimed through revegetation and site in accordance with the Reclamation Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The unusual plant assemblage impacts would not differ from those of the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable. Mitigation Measure 3.4-3, however, would not apply.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.4-4: Introduction of Exotic Species

**PROPOSED ACTION:** *The Proposed Action could result in the establishment of exotic and/or invasive species in disturbed areas.*

The introduction of exotic plant species into areas already disturbed from previous mining operations could make the re-establishment of native plant species more difficult. Exotic plants compete with native plants for water and nutrients at the mine site; often, exotic plant species will out compete native plants, potentially impacting the continued viability of native plant populations in the area. The Castle Mountain Mine has operated for 6 years; approximately 545 acres of land have been disturbed. No significant introduction of exotic species has occurred. The Proposed Action would involve the disturbance of an additional 490 acres of native plant communities beyond the acreage presently authorized. This increase in mining disturbance, however, is not expected to result in the introduction of any exotic plant species since there has been no significant introduction of these species over the past 6 years.

**Mitigation Measures:** The following measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures will ensure continued success in preventing introduction of exotic species, and would reduce this impact to a less than significant level.

#### COUNTY CONDITION OF APPROVAL

48. h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the project site, a weed control program acceptable to the County and BLM shall be implemented.

#### BLM STIPULATION

21. h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the project site, a weed control program acceptable to the County and BLM shall be implemented.

This monitoring is performed as part of a revegetation research program. To date, no significant introduction of exotic species has been detected.

**Level of Significance after Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no additional impacts related to exotic species.*

The Castle Mountain Mine has operated for 6 years; approximately 545 acres of land have been disturbed to date. No significant introductions of exotic species have occurred. There will be no additional impacts related to the establishment of exotic or invasive plant species in disturbed areas.

As currently permitted, mining operations, including the associated impacts to vegetation would continue through the year 2000. Upon cessation of mining operations, the site would be reclaimed through revegetation and site



restoration in accordance with the Reclamation Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The South Overburden Site Expansion Alternative would result in less surface disturbance, thereby reducing the potential for the establishment of exotic species.*

**Mitigation Measures:** The environmental consequences associated with this alternative would be less than those of the Proposed Action but similar, and therefore, the same mitigation measures would be applicable.

**Level of Significance after Mitigation:** Less than significant.

### **Impact 3.4-5: Potential Effects to Piute Spring Riparian Vegetation**

**PROPOSED ACTION:** *The Proposed Action would result in no additional impacts to riparian vegetation associated with Piute Spring.*

There are no impacts expected to the groundwater supply to Piute Spring that could affect its riparian vegetation. While the Proposed Action would extend the period of groundwater pumping, the rate would not change. The Previous EIS/EIR evaluation was based on a potential maximum average

production of 725 acre-feet annually. Actual pumping through June 1996 averaged approximately 400 acre-feet. No drawdown beyond that predicted in the Previous EIS/EIR is therefore anticipated. Specific information on groundwater and Piute Spring is provided in Section 3.3, Water Resources.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no additional impacts to riparian vegetation associated with Piute Spring.*

No additional potential to impact riparian vegetation associated with Piute Spring would occur. As currently permitted, the Castle Mountain Mine, including the associated impacts to vegetation would continue to operate through the year 2000. Upon cessation of mining operations, the site would be reclaimed through revegetation and site restoration in accordance with the Reclamation Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The South Overburden Site Expansion Alternative would result in no additional impacts to riparian vegetation associated with Piute Spring.*

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

There are no impacts expected to the groundwater supply to Piute Spring that could affect its riparian vegetation. While the South Overburden Site Expansion Alternative would extend the period of groundwater pumping, the rate would continue to average approximately 400 acre-feet, similar to the rate of the Proposed Action. Groundwater level monitoring to date demonstrates no drawdown beyond that predicted in the Previous EIS/EIR. Specific information on groundwater and Piute Spring is provided in Section 3.3, Water Resources.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

#### 3.4.3 Cumulative Impacts and Mitigation Measures

The Proposed Action would increase the amount of ongoing disturbance to vegetation at the Castle Mountain Mine. Current mining operations have disturbed approximately 545 acres of vegetation; 890 acres of disturbance is currently permitted. The Proposed Action would disturb an additional 490 acres of vegetation. Based on current disturbance to vegetation, the Proposed Action would result in a cumulative impact of approximately 1,035 acres (545 acres plus 490 acres). However, as currently permitted, the Proposed Action would result in a cumulative impact up to 1,380 acres (890 acres plus 490 acres). This 490 acres of additional disturbance would also be in addition to the regional vegetation loss associated with the Golden Quail Mine, PRM Golf Course at Stateline, and the MolyCorp Mountain Pass Mine.

The South Overburden Site Expansion Alternative would also increase the amount of ongoing disturbance to vegetation at the mine site. However, the amount of additional surface disturbance would be reduced, when compared to the Proposed Action, from 490 acres to 325 acres. The No Action Alternative would not increase the amount of ongoing disturbance to vegetation associated with the current mining operations.

The Castle Mountain Mine, however, is isolated. Other past, present, or reasonably foreseeable future projects in the region are located at considerable distances from the mine site, except for clay mines and historic gold mining, which are included within the project area. For this reason, the effects of the Proposed Action in combination with the other projects in the region will be scattered areas of vegetation loss. The separation of the areas of impact will lessen the overall effect of the cumulative loss of vegetation in several ways; allowing for more feasible revegetation and allowing areas of refuge nearby for any wildlife displaced from their habitat. Moreover, both the Golden Quail Mine and MolyCorp Mountain Pass Mine will be reclaimed in accordance with SMARA, thereby reducing the vegetation impacts over time.

Mitigation measures already implemented in the current mining operations include revegetation and site restoration. The ongoing revegetation of native plant species, in combination with the proposed reclamation, will mitigate both the project-specific and cumulative impacts to vegetation, reducing cumulative impacts on vegetation to the extent feasible.



**Mitigation Measures:** All feasible mitigation measures have been applied. No additional mitigation measures are available that would reduce this impact to a less than significant level.

**Level of Significance After Mitigation:** Significant and unavoidable (Standard of Significance 3.4B).

For purposes of CEQA, the County of San Bernardino determined that the initial Castle Mountain Mine addressed in the Previous EIS/EIR would result in a significant unavoidable cumulative impact on vegetation. The incremental increase due to the Proposed Action would therefore contribute to this significant effect for a cumulatively significant unavoidable impact to vegetation under CEQA.

#### 3.4.4 Residual Adverse Effects

**PROPOSED ACTION:** The Proposed Action would result in the removal of approximately 490 additional acres of vegetation. This impact would be mitigated through the implementation of the Reclamation Plan. However, it is expected to require several decades for the vegetation to return to pre-project conditions.

Total mine pit area remaining would be 170 acres. Successful revegetation would not be possible on the pit walls, resulting in some permanent loss of native plant communities. Pit floors and benches would be revegetated in accordance with the Reclamation Plan. However, the creation of mine pits would have a residual effect on vegetation. Distribution of plant species would not be identical to pre-mining conditions. Species composition and density would be subject to

the established criteria for reclamation success, as described in Section 2.2-8.

**NO ACTION ALTERNATIVE:** Since the No Action Alternative would result in no changes to the currently permitted operations, there would be no residual adverse effects.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** The South Overburden Site Expansion Alternative would remove approximately 325 acres of vegetation. This impact would be mitigated through the implementation of the Reclamation Plan. However, it is expected that several decades would be required for the vegetation to recover to pre-project conditions.





**SECTION 3.5**  
**WILDLIFE**

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## 3.5 WILDLIFE

### 3.5.1 Affected Environment

#### Introduction

Information on wildlife is based upon research and field studies completed for the Previous EIS/EIR. Field studies were completed for the site and surrounding area, and along the mine access road. Information on habitat types, animals observed, and observations of tracks and scat was recorded in field notes and on topographic maps or aerial photographs. Abandoned mine workings were investigated for their potential as habitat for bats or other species. Based upon the field studies and review of literature for known and expected species distributions, comprehensive species lists were prepared and are included in Appendix E. In preparing this EIS/EIR for the proposed mine plan amendments, biologists again visited the site to confirm the species present; listed special status species were updated to reflect current regulatory standards.

This section provides a description of the habitats and animals which are known or expected to occur in the region and on the mine site. The wildlife conditions at the mine site and along the mine access road are similar, so both are included in a single discussion of the existing environment. Particular attention has been given to species of special interest, such as bighorn sheep and desert tortoise.

#### Regional Habitats and Species

The habitat of wildlife species can often be correlated to the plant communities in which they live. Eastern Mojave Desert habitats, especially creosote bush scrub and Joshua tree

woodland, are widespread and therefore support a fauna that itself consists of mostly widely distributed species. Most of the vegetation in the Lanfair Valley region consists of Joshua tree woodland and creosote bush scrub. Access roads to the site traverse creosote bush scrub and Joshua tree woodland from the west in Ivanpah Valley, from the northeast along the mine access road in Piute Valley, and from the south in Lanfair Valley. Other plant communities, including blackbush scrub, pinyon-juniper woodland, and riparian and desert wash assemblages, occur over a maximum of approximately 10 percent of the total area in this region of the Mojave Desert.

#### *Amphibians*

One amphibian, the red-spotted toad (*Bufo punctatus*) is expected to occur in the region. This toad is known to occur at desert springs and ephemeral water sources in desert canyons. It occurs at Piute Spring and is expected to occur in the New York Mountains to the west, where reliable water sources can be found.

#### *Reptiles*

The reptile species which may be found in the region (refer to Appendix E) are typical of similar locations in the eastern Mojave Desert. Most are widely distributed species of lizards and snakes. Two reptiles are of special interest: the desert tortoise and the Gila monster.

The desert tortoise (*Gopherus agassizii*), a federal and California threatened species, is of limited abundance at the elevation of the northern portion of Lanfair Valley, but large populations are well documented in the Ivanpah and Piute valleys, which are at lower elevations.



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The Gila monster (*Eloderma suspectum*), a BLM sensitive species, is known from the Clark Mountains north of Lanfair Valley and is variously reported (but not documented by specimens) to occur in the vicinity of the New York and Providence Mountains. There are other reports of specimens being seen in the surrounding area (such as at Piute Spring), but these reports are not yet documented either in the literature, or with specimens in museums.

#### **Birds**

Most of the birds expected to be found in the Lanfair Valley region are not considered to be permanent residents, but simply fly over, forage, or feed in the area for a short time, often seasonally. Because of the absence of water, their numbers are expected to be limited. The birds listed in Appendix E are widely distributed desert species.

Several raptors (falcons, eagles, vultures, hawks, and owls), all widely distributed species, occur or are expected to occur within the region. These raptors are of interest because of their role in the natural ecosystem balance, and are known to feed throughout the Lanfair Valley area. Owl species, the kestrel, and possibly the red-tailed hawk (*Buteo jamaicensis*) may nest in the study area. An immature golden eagle (*Aquila chrysaetos*) was observed during the baseline field studies for the Previous EIS/EIR, approximately 3 miles south of the Castle Mountain Mine. This species probably nests at higher elevations and cliffs in the New York Mountains and elsewhere in the region and forages widely throughout the desert. Though not listed as threatened or endangered, the golden eagle is a fully protected species in California (DFG Code, §3511) and receives additional federal protection under amendments to the Bald Eagle Protection Act

(PL 92-535). Raptors and many other birds are protected from hunting by the Federal Migratory Bird Treaty Act.

Several bird species listed by the California Natural Diversity Data Base (CNDDDB) as "sensitive species" are known to occur in the region and could occur occasionally over the mine site. Prairie falcon (*Falco mexicanus*) and Bendire's thrasher (*Toxostoma bendirei*) are known to occur in Lanfair Valley to the south. Gray vireo (*Vireo vicinior*), and Swainson's hawk (*Buteo swainsoni*) have also been noted. These are species of fairly wide distribution, but prairie falcon and Swainson's hawk are not common.

Open pools of water often attract migrating shore, aquatic, and water birds. Those that visit pools of water at the edge of the mostly dry Soda Lake, located some 50 miles to the west of the mine site, are listed in Appendix E. Some of these species may occasionally visit areas of Lanfair Valley where there is standing water, such as at livestock watering facilities.

#### **Mammals**

Lists of mammals observed or expected to occur in Lanfair Valley are presented in Appendix E. Most are common and widespread species typical of high desert areas. Common species include the coyote (*Canis latrans*), blacktail jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), and the whitetail antelope ground squirrel (*Ammospermophilus leucurus*). Desert woodrat (*Neotoma lepida*) nests have been observed on the project site by Gould. Several species of mice (*Peromyscus spp.*) And other common small mammals are also expected to be present. Desert bighorn sheep (*Ovis canadensis*) live in the surrounding



mountains. This species is discussed in detail below as a special interest species.

Bats may occur among the rocks and Joshua trees of Lanfair Valley, which provide daytime roosts and nursery sites for bats, as well as sites for winter hibernation. Abandoned mine tunnels in the Hart Mining District are used by limited numbers of bats. Year-round residents in the vicinity are expected to include the Yuma myotis (*Myotis yumanensis*), California myotis (*Myotis californicus*), western pipistrelle (*Pipistrellus hesperus*), and pallid bat (*Antrozous pallidus*). Seasonally, the California leaf-nosed bat (*Macrotus californicus*), fringed myotis (*Myotis thysanodes*), big brown bat (*Eptesicus fuscus*), Townsend's big-eared bat (*Plecotus townsendii*), and Brazilian free-tailed bat (*Tadarida brasiliensis*). In the spring, the silver-haired bat (*Lasionycteris noctivagans*) and hoary bat (*Lasirius cinerius*) are known to migrate through this area. Most of these species roost individually or in small groups, rather than in large colonies, and they tend to use fissures in rocks.

### Local Habitats and Species

Wildlife habitats represented at the Castle Mountain Mine site are typical of the Mojave Desert. Studies for the Previous EIS/EIR documented that no habitats of restricted distribution, or habitat essential to a threatened or endangered species, would be affected.

The proposed mine plan modifications would occur on the existing mine site; the same types of wildlife habitat and species therefore occur.

### Special Interest Species

Several species of wildlife considered to be of special concern by resource agencies and/or conservation organizations were identified as occurring or potentially occurring within the vicinity of the mine site. These species are of special concern for a variety of reasons, including: (1) their populations are declining, (2) they are especially vulnerable to habitat change, or (3) they have restricted distributions and are naturally rare. These include five species of birds (golden eagle, Swainson's hawk, prairie falcon, Bendire's thrasher, and gray vireo), two reptiles (desert tortoise and Gila monster), and three mammals (bighorn sheep, California leaf-nosed bat, and Townsend's big-eared bat), as shown in Tables 3.5-1 and 3.5-2. Occurrence of these species are summarized in the following paragraphs.

#### Birds

The golden eagle is a species protected by federal legislation. Four other special interest species are not afforded legal protection (other than from hunting) but are referred to by the CNDDDB as "sensitive species" and are expected to use onsite and/or offsite habitat for forage or breeding. Two of these, Bendire's thrasher and prairie falcon, have been sighted in the surrounding area. Bendire's thrasher is widespread in this region, and individuals were recorded onsite during the inventory in the creosote bush scrub community. This species prefers open farmlands, grasslands, and brushy desert and often nests in cacti. The Bendire's thrasher is a migrant to the Lanfair Valley area, arriving in spring for breeding. Two other species, gray vireo and Swainson's hawk, are known to occur in the area and have been sighted in southern Lanfair Valley.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

<b>TABLE 3.5-1 SPECIAL STATUS SPECIES KNOWN OR EXPECTED TO OCCUR IN THE VICINITY OF THE CASTLE MOUNTAIN MINE</b>			
<b>Species</b>	<b>FWS<sup>1</sup></b>	<b>BLM<sup>2</sup></b>	<b>DFG<sup>3</sup></b>
<b>Reptiles</b>			
<i>Gopherus agassizi</i> , desert tortoise	FT <sup>4</sup>	Sensitive	Threatened
<i>Eloderma suspecium</i> , gila monster	Not Listed*	Not Listed	Species of Concern
<b>Birds</b>			
<i>Aquila chrysaetos</i> , golden eagle	Not Listed	Not Listed	Species of Concern
<i>Buteo regalis</i> , Ferruginous hawk	Not Listed*	Not Listed	Species of Concern
<i>Buteo swainsoni</i> , Swainson's hawk	Not Listed	Not Listed	Threatened
<i>Falco mexicanus</i> , prairie falcon	Not Listed	Not Listed	Species of Concern
<i>Toxostoma bendirei</i> , Bendire's thrasher	Not Listed	Not Listed	Species of Concern
<i>Vireo vicinior</i> , gray vireo	Not Listed	Not Listed	Species of Concern
<b>Mammals</b>			
<i>Ovis canadensis nelsoni</i> , desert bighorn sheep	Not Listed*	Not Listed	--
<i>Macrotus californicus</i> , California leaf-nosed bat	Not Listed*	Not Listed	Species of Concern
<i>Plecotus townsendii</i> , Townsend's big-eared bat	Not Listed*	Not Listed	Species of Concern

**NOTES:**

- (1) FWS (U.S. Fish and Wildlife Service)
  - (2) BLM (U.S. Bureau of Land Management)
  - (3) DFG (State of California Department of Fish and Game)
  - (4) FT A species likely to become endangered in the foreseeable future throughout all or a significant portion of its range.
- \* These species were considered to be Category 2 candidate taxa for federal listing until February 28, 1996, when the USFWS revised their status classification system. These species no longer have any federal candidate designation.



**TABLE 3.5-2**  
**ENDANGERED SPECIES PROTECTION CATEGORIES**

Term		Interpretation	Protection Afforded Under Endangered Species Act <sup>1</sup>
FESA	Listed (endangered or threatened species)	A species that has been the subject of a proposed and final rule or regulation in the <i>Federal Register</i>	Fully protected. Recovery plans are required.
FESA	Proposed (endangered or threatened species)	A species for which a proposed regulation has been published in the <i>Federal Register</i> , but not a final rule	Not protected, but must be addressed in environmental assessments. Must informally confer with USFWS if likely to jeopardize the continued existence.
CESA	Listed	Listed as endangered or threatened by the State of California	Fully protected, even if not listed by FESA.
CESA	Proposed	A species proposed for listing under CESA	Fully protected
CNPS	Lists 1 and 2	Plants are rare and endangered in California	Mandatory CEQA consideration.

## NOTE:

- (1) FESA - Federal Endangered Species Act  
 CESA - California Endangered Species Act  
 CNPS - California Native Plant Society

***Desert Tortoise***

The desert tortoise is designated as a *threatened* species by the U.S. Fish and Wildlife Service (FWS) under the Federal Endangered Species Act, and as *threatened* by the California Fish and Game Commission (CDFG), pursuant to the California Endangered Species Act.

On August 4, 1989, USFWS published an emergency rule listing the Mojave population of the desert tortoise as endangered. In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened. USFWS designated critical habitat for the desert tortoise in portions of California, Nevada, Arizona, and Utah in a final rule, published

February 8, 1994. A final recovery plan for the desert tortoise was published by USFWS June 1994.

Desert tortoise inventories were completed as part of the Previous EIS/EIR. One tortoise was found, adjacent to the site. No scat or sign was found on the site. Potential burrows identified were later determined not attributable to tortoises. Desert tortoise clearance surveys were conducted at the time of initial development of the mine. One tortoise was found to occur on the site. In the desert tortoise clearance work for construction of the mine access road, two tortoises, fourteen burrows, and two carcasses were encountered.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Habitat conditions for desert tortoise are marginal over the majority of the site. The mine site and the portion of the access road in California are low quality tortoise habitat. A total of approximately 2,120 hours were expended searching for tortoise on the mine site and the access road in California; no burrows or carcasses were located.

The portion of access road in Nevada is more suitable habitat but still only marginal compared to the adjacent habitat at lower elevations in the Piute Valley. The burrows and tortoises located were concentrated almost entirely in the washes, an indication that the tortoises may be near the edge of their territory and need the protection and forage of the wash to survive.

BLM approval of the Castle Mountain Mine was conditioned on Viceroy implementing the reasonable and prudent terms and conditions spelled out in the Biological Opinions issued by the FWS (#1-6-90-F-24) and the Memorandum of Understanding (MOU) issued by CDFG. Copies of the Biological Opinions are provided in Appendix G. These Biological Opinions called for:

- Erection of tortoise exclosure fences around the construction sites at the mine site, and the removal of all tortoises from within the enclosed areas before construction activities are started;
- Use of biologists approved by the FWS to accompany construction crews during the building of the access road so that any tortoises encountered could be moved out of harm's way;
- An employee education program; and

- The purchase of 745 acres of tortoise habitat to compensate for the loss of habitat at the mine site.

The Biological Opinions allowed a "take" of three tortoises during construction (one at the mine site, two along the access road) and a maximum of seven more during the 10-year mine operating life.

Compliance activities were undertaken by the Applicant in connection with the initial construction activities at the mine site, and along the Walking Box Ranch access road. The tortoise exclosure fence was erected in June/July 1991. The one tortoise, found in the vicinity of the South Overburden Site, was placed outside the exclosure fence. There were no tortoise mortalities or injuries during construction. One tortoise carcass was found on the access road in Clark County, Nevada on June 8, 1993.

Employees receive regular training respecting tortoise issues as part of their safety and training orientation, with additional reminders when tortoises are active.

Title to 745 acres of tortoise habitat purchased by the Applicant has been conveyed to BLM to offset the impacts of habitat disturbance by the Castle Mountain Mine.

#### *Desert Bighorn Sheep*

The desert bighorn sheep is designated by BLM as a sensitive species. It is protected by state law and is illegal to hunt except when specifically authorized. Although bighorn sheep were formerly widespread throughout the southwestern United States, today they occur in isolated populations. Those in the desert are usually associated with mountain ranges. Bighorn sheep are known to occur in



the Castle Mountains. Barring harassment, bighorn sheep quickly habituate to the presence of humans and may be little disturbed by their activities. Bighorn sheep have been observed by Castle Mountain Mine personnel as the sheep occasionally wander through the site.

### **Bats**

Although no California bats are currently listed as threatened or endangered by state or federal agencies, a recent compilation of mammalian species of special concern has been performed for the DFG. This listing, which includes first and second priority species, carries no legal status at present, but the various regulatory agencies use it as a management guide. Of the bats expected to occur on the project site, two are second priority species: California leaf-nosed bat and Townsend's big-eared bat.

The Castle Mountains are located near the northern limits of the range of the California leaf-nosed bat. The known distribution of this species is currently along the Colorado River, although historically, a large population occurred in the eastern Las Vegas Valley. The California leaf-nosed bat forages during the early, warmer evening hours when insects are active. This species does not hibernate and is found in warm tunnels or caves during the winter. The open configuration of mine shafts and adits at the Castle Mountain Mine have cool temperatures which precludes substantial use by this bat.

Townsend's big-eared bat, a former federal Category 2 candidate species and a California species of special concern, migrates elevationally to locate suitable hibernals, usually at higher elevations with low, constant temperatures. This bat periodically moves

from one hiberna to another and will forage and drink when possible during this time.

During previous bat surveys for the Castle Mountain Mine site, Townsend's big-eared bats were found in some of the mine workings (Brown, 1995). Several of these bats were removed from the Valley View shaft in 1989 prior to the commencement of current mining operations.

Bats use old mine workings, such as abandoned shafts and adits, for winter hibernation and for maternity colonies in the summer. Surveys were done in the winter and spring to determine the extent of bat use of the mine workings and to determine the need for removal in the early spring or fall. Subsequent removal took place on May 8 through 11, 1996, in mine workings that may be impacted by the Oro Belle-Hart Tunnel expansion.

Survey results concluded that none of the mine workings likely to be affected by the Proposed Action contained maternity colonies of bats. Solitary male *Plecotus* were found in 10 of the 22 mine workings surveyed. Three mine workings that housed torpid *Plecotus* in the winter also contained single bats in May, indicating limited warm season use by bats. These workings share the characteristic of a shaft intersecting a lower adit. In addition, a lactating female was captured in a mist net entering the Oro Belle adit #1 after dark, indicating the presence of a maternal colony outside the survey area.

### **3.5.2 Environmental Consequences and Mitigation Measures**

The following section evaluates the potential impacts on wildlife resulting from the

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

proposed modifications to the currently permitted mining operations at the Castle Mountain Mine. The identified wildlife issues are:

- Reduction of wildlife habitat quality by removal of approximately 490 acres of additional vegetation and destruction of animal burrows,
- Potential exposure of wildlife to cyanide solution,
- Indirect impact to riparian habitat through continued withdrawal of Lanfair Valley groundwater (if Piute Spring were to be affected),
- The impact of continued road traffic on desert tortoise populations in the Ivanpah and Piute valleys,
- Continued use of artificial lighting,
- Continued noise levels associated with mining,
- Potential for increase in ravens, and
- Potential for impacts from power lines on raptors.

#### Standards of Significance

The Proposed Action would be considered to have a significant wildlife impact if it resulted in any of the following:

- 3.5A Substantial reduction of habitat for a wildlife species;
- 3.5B Substantial interference with the movement of resident and migratory wildlife species;
- 3.5C Disruption at critical time periods (nesting/breeding) for wildlife species; and
- 3.5D Reduction in numbers of any rare, threatened, or endangered species or their habitats.

#### Impact 3.5-1: Habitat Impacts Due to Surface Disturbance

**PROPOSED ACTION:** *Development of additional mine, overburden storage, and heap leach pad areas would result in an incremental reduction in the quality of onsite wildlife habitat as facilities are developed over the life of the mine.*

#### General Wildlife

Impacts to wildlife in the area of the Proposed Action would result from direct habitat loss and increased human disturbance of wildlife. Project construction would result in the mortality and displacement of an unknown number of small mammals, reptiles, birds, and invertebrates that use these habitats. Some of these animals may be absorbed into adjacent habitats.

At project completion, an additional 490 acres would be disturbed in the blackbush scrub and Joshua tree woodland/creosote bush scrub/desert grassland habitats. These habitats are used by various animals common to the Mojave Desert. Because creosote bush scrub and Joshua tree woodland and blackbush scrub habitats are abundant in Lanfair Valley (over 217,000 acres) and throughout the Mojave Desert, construction and operation of the additional facilities would not cause significant regional population level declines for wildlife species associated with these habitats.



### ***Restricted Habitats***

These disturbances would likewise affect habitat quality for common species with more particular habitat requirements; desert bighorn sheep habitat, and former mine workings used as habitat by bats.

Approximately 15 desert bighorn sheep are known to inhabit the Castle Mountains and northern portion of the Piute Range. Although their specific range has not been mapped, the 490 acres of forage area removed for the project area would be approximately 2 percent of their available habitat in this mountainous area covering approximately 47 square miles. There are no bighorn sheep watering holes on the mine site. The sheep population has not been adversely affected by the existence of the Castle Mountain Mine over the past 5 years. No significant impact to this population is anticipated as a result of the mine plan amendments.

Approximately 12 of the remaining 16 abandoned mine shafts or adits on the site would be removed for expansion of the Oro Belle and Hart Tunnel Pits. These former mine workings were inspected for bats and closed to their entry, in accordance with mitigation measures established in the Previous EIS/EIR.

Survey results concluded that none of the historical mine workings likely to be impacted by the Proposed Action contained maternity colonies of bats. Solitary male *Plecotus* were found in 10 of the 22 mine workings surveyed. Three mine workings that housed torpid *Plecotus* in the winter also contained single bats in May, indicating limited warm season use by bats. These workings share the characteristic of a shaft intersecting a lower adit.

Bats were removed on May 8 through 11, 1996, after the hibernation and prior to the establishment of hibernation colonies. Where possible, bats were removed from the mine workings and moved to an adit on the other side of the hill. At the time of the eviction, bats were found in 7 of the 19 mine workings visited.

To mitigate for the loss of bat roosting habitat in the workings that will be impacted by the mine expansion, the security of unimpacted mine features could be enhanced by the installation of "bat gates." These "bat gates" are installed to allow bats access to the mine workings, while excluding people. The Green and Gold Mine and the two adits by the West Clay Pit would be suitable for this treatment.

Prior to active mining in the area, resident bats will be removed, where feasible. The removal of bats will be done by watching for bats to exit the workings for at least one hour after dusk. The mine opening is to be barricaded with bat-proof material to prohibit bats from re-entering the mine. If a mine can be entered, the *Plecotus* will be captured with hand nets and released in another abandoned mine, or outside after dark.

Disturbance to these species would be short-term, and the probability of mortality would be low. No significant impact is expected.

### ***Protected Species***

At lower elevations on the mine site, areas considered to be habitat for the desert tortoise would be affected by 90 acres of additional disturbance for expansion of the heap leach pad. Consistent with actions taken for the initial development of the Castle Mountain Mine, to minimize potential impacts to tortoises, burrows would be located and

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

inspected prior to surface disturbing activities. Tortoises, if any, would be relocated outside the exclusion fence.

The Proposed Action is not expected to significantly disrupt wildlife movement patterns or result in significant habitat fragmentation. However, some avoidance of the area during the life of the Proposed Action is expected, due to loss of habitat, presence of humans, and noise. The mine site does not intercept known unique migratory pathways.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented as part of mine operations and monitored for effectiveness. Ongoing implementation of the following measures would adequately address potential impacts related to disturbance of wildlife habitat for the Mine Plan Amendments.

#### COUNTY CONDITIONS OF APPROVAL

##### Desert Tortoise

56. A program to educate employees about area wildlife shall be implemented by the Applicant in connection with the safety program. The program shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or interfering with wildlife, especially the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations. [DEIR p. 6.5-2.]

58. Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times. [FEIR Table 3.1.]

59. The Applicant shall locate and flag onsite tortoise burrows before initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and FWS.

Compliance activities were undertaken by the Applicant in connection with the initial construction activities at the mine site, and along the Walking Box Ranch access road. The tortoise exclosure fence was erected in June/July 1991. The one tortoise, found in the vicinity of the South Overburden Site, was placed outside the exclosure fence. There were no tortoise mortalities or injuries during construction. One tortoise carcass was found on the access road in Clark County, Nevada on June 8, 1993.

60. The Applicant shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status.

All employees receive regular training respecting tortoise issues as part of their safety and training orientation, with additional reminders when tortoises are active.

65. The Applicant shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U.S. Fish and Wildlife Service Biological Opinion.

Compliance is ongoing.

##### Bats

67. An examination of former mine shafts and adits shall be completed prior to earth-moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed during the winter hibernation period by



an ecologist familiar with bat fauna. If a colony is found, or substantial use by individual bats is indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by colony will be required for project development, a mitigation program shall be completed.

68. To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress.

All adits or other abandoned mine workings potentially affected by the Proposed Action have been surveyed. Measures to protect bats that may inhabit these workings continue to be implemented.

#### Bighorn Sheep

70. Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.

The existing project fencing meets these specifications.

#### BLM STIPULATIONS

32. A program to educate employees about area wildlife shall be implemented by the Operator in connection with the safety program. The Operator shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or interfering with the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations.
33. An environmental specialist or contracted consultant shall be employed by the Operator to monitor the effectiveness of wildlife mitigation measures and the revegetation program. Results

shall be reported to BLM and County monthly as concerns wildlife measures and annually concerning the revegetation program.

An environmental specialist is employed by the mine and submits regular reports to the BLM and County.

35. Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times.
36. The Operator shall locate and flag on-site tortoise burrows before initiating surface disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and USFWS.
37. The Operator shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status.
41. Power lines shall be constructed in a manner to discourage raven nesting/roosting. As part of the on-site biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess whether unusual increases in raven populations are occurring.
44. The Operator shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U.S. Fish and Wildlife Service's Biological Opinion.

A copy of the 1995 Annual Report Memorandum on the Biological Opinion is provided in Appendix H. Compliance with FWS Biological Opinion #1-6-90-F-24 is ongoing.

47. An examination of former mine shafts and adits shall be completed prior to earth-moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed during the winter hibernation period by an ecologist familiar with bat fauna. If a colony is found, or substantial use by individual bats is

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by colony will be required for project development, a mitigation program shall be completed.

48. To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress.
50. Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement.

**Additional Mitigation Measure 3.5-1a:** Provide compensation for desert tortoise habitat disturbed by the Proposed Action on a 1:1 basis, for that acreage determined by the BLM and the FWS to be desert tortoise habitat.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no changes to the currently permitted operations.*

There will be no additional wildlife related impacts from additional surface disturbance to the currently permitted mine operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon cessation of mining operations, the site would be reclaimed through revegetation and site restoration in accordance with the approved Reclamation Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would result in the disturbance of 325 acres of wildlife habitat.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be less than those of the Proposed Action, but similar in nature, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### **Impact 3.5-2: Cyanide Solution Mortality**

**PROPOSED ACTION:** *Cyanide solution associated with the heap leach mining process could result in incidents of mortality to resident and migratory wildlife species.*

The heap leach process currently used at the Castle Mountain Mine uses a weak solution of calcium or sodium cyanide to leach precious metals from ore. Ingestion of sufficient quantities of cyanide solution, or prolonged contact with the skin, can result in death. Since animals seeking water can be attracted to ponds holding the cyanide solution, it is a potential hazard to terrestrial and avian wildlife.

Problems with wildlife deaths attributable to cyanide poisoning previously experienced at other mines have been minimized at the Castle Mountain Mine. Access to solution at the heaps is restricted from terrestrial wildlife by



chain link fencing and a desert tortoise exclusion fence. Measures incorporated into the Castle Mountain Mine design and operations include:

- **Solution Storage:** Process solutions are stored in steel tanks.
- **Fencing:** Terrestrial animals are protected from solution ponds by chain link fencing.
- **Netting:** Stormwater overflow basins are covered with mesh netting.
- **Heap Leach Piles:** Drip irrigation methods are used to distribute solution directly onto heap surface.
- **Solution Handling:** The solution collection and transport system operates as a closed circuit, with solution transported from the heap piles to storage ponds and to the processing plant in a system of closed pipes. Ditches are used only to carry heavy storm runoff.

These measures may be modified and improved in the future as new techniques for protecting animals from cyanide solution are developed by the mining industry. Photographs of the existing solution containment system are shown in Figure 3.5-1.

The impacts to wildlife have therefore been minimized. Over the past 5 years, animal deaths have been accounted for as part of the active monitoring. In July 1996, a coyote was found dead by the day tank used to dilute concentrated sodium cyanide solution. Death was likely attributable to dried cyanide below a valve; the animal may have ingested this

material, believing it to be a salt lick. Bird kills were initially higher, primarily as a result of exposure of cyanide solution on the heap leach pad.

Bird deterrence measures, as stipulated by the BLM and CDFG, have been developed and implemented at the mine. These measures include the use of a propane "boom" cannon at the heap leach pad and the placement of guzzlers outside the heap leach pad perimeter. The propane cannons are fired on a set interval and "as needed" basis when birds near the heap leach pad. In addition, several guzzlers have been placed outside the heap leach pad perimeter to provide an alternate water source for any birds congregating near the heap leach pad. A program which includes placing netting over the heap leach pad is now implemented to minimize bird mortality, which occurred during the early stages of mining operations. The netting is inspected daily to ensure its integrity.

These measures have been effective in reducing the numbers of birds congregating at the heap leach pad and subsequently killed as a result of sodium cyanide ingestion.

Overall, bird kills have been minimized at the mine site. In 1992, 48 bird kills were recorded. This number has been reduced to 33 in 1993, 9 in 1994, 6 in 1995, and 12 in 1996.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented and monitored for effectiveness. As described above, operations have been modified as necessary to protect wildlife. Continued



Date: 11/96

Photograph: Lilburn Corporation



Process solutions are carried from heap leach pad in enclosed pipes laid in lined ditches with berms. Netting provides wildlife exclusion from stormwater solution flow.

Date: 11/96

Photograph: Lilburn Corporation



Process solutions are stored in containment tanks specifically constructed for wildlife protection.

# Solution Containment for Wildlife Protection Photographs



implementation of these measures, including the following measures would adequately address potential cyanide solution hazards to wildlife for the Mine Plan Amendments.

## BLM STIPULATIONS

7. A monthly report on cyanide-related animal mortalities must be submitted to the BLM Needles office no later than the 10th of each month. The report shall include the following information:

- a. The number and kind of each mortality attributed to cyanide. "Kind" will be reported under one of the following categories: raptors, songbirds, upland game birds, waterfowl, shore birds, mammals, and other;
- b. Location where the dead animal was found; and
- c. Other information requested by the BLM.

This monthly report is prepared and submitted as required.

34. Measures to isolate cyanide processing solutions from wildlife have been incorporated into project design plans. Specific measures to be employed shall be tested for their effectiveness in an ongoing evaluation program after commencement of operations.

A. The Solution Storage Area shall:

- (1) Utilize steel storage tanks.
- (2) Be designed so that solutions are unavailable to wildlife.
- (3) Include fencing or and netting over the emergency storage basin, designed to preclude access by birds and bats.

These measures have been implemented on the project site.

- (4) Employ hazing techniques if process solution enters the stormwater storage basin.

These measures have already been implemented at the mine.

- (5) If avian entanglement becomes a problem, the Operator shall replace the netting over the emergency storage basing with a different type of net or will implement another method to prevent entanglement.

B. Heap Leach Piles

- (1) Active heap leach pads shall be surrounded by chain link fencing.
- (2) Drip irrigation methods shall be used to distribute solution directly on the heaps, including both tops and sides, in order to minimize potential ponding of water available to birds and other animals.

These measures were incorporated into project design at construction.

C. Solution Handling

The cyanide solution system shall be operated as a closed circuit, with solution transported from heap piles to storage tanks, to processing plant, and back to the heap piles in a system of pipes, rather than open ditches. Open ditches will be used only to carry heavy storm run-off.

This measure is part of the current design and operation of the mine.

***Additional Mitigation Measure 3.5-2a:*** The margins of the heap leach pad shall continue to be covered daily with netting and/or other material to deter access to the solution for birds.

This measure has already been implemented at the mine.

***Level of Significance After Mitigation:*** Less than significant.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional wildlife mortality related impacts from cyanide solution to the currently permitted mine operations. As currently permitted, mining operations would continue through the year 2000. Upon cessation of mining operations, the site would be reclaimed through revegetation and site restoration according to the Reclamation Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The used cyanide solution impacts of this alternative would not differ from those of the Proposed Action.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

#### **Impact 3.5-3: Traffic Mortality**

**PROPOSED ACTION:** *Continued mine operations and vehicle traffic could result in loss of desert tortoise and other wildlife due to vehicle strikes.*

Vehicle traffic on desert roads is known to result in impacts on wildlife. The degree of impact is a function of various factors including travel speed, road width and age, and traffic volume. Of particular concern is the impact on desert tortoise populations, from continued vehicle traffic on the mine access road. While other wildlife along roads would also be potentially affected by mine traffic and other traffic, these species are generally more abundant and/or of greater distribution, and their populations would not be expected to be significantly affected.

There has been one "take" since operations commenced. A tortoise carcass was found at the side of the access road in Clark County, Nevada on June 8, 1993. It appeared to have been run over by the outside wheel of a dual-axle vehicle. Efforts to identify the vehicle involved in this incident were unsuccessful, and, therefore, it was not possible to determine if the death should be attributed to mine-related traffic, or attributed to general public traffic, such as a camper vehicle, as such vehicles also use this road. Based on the potential for this tortoise death to be attributed to mine-related traffic, it is anticipated that the Proposed Action would only result in a maximum of two or more fatalities. This is one more than originally anticipated in the Biological Opinion.

The existing mine access road, which was located to avoid tortoise habitat, is located above high density tortoise habitat found in the lower portions of the Piute Valley. Since the construction of the access road, portions of the Piute Valley were designated as critical habitat. The northern segment of the road, which is approximately 4.3 miles in length, is located at the western margin of the critical habitat, located entirely within Nevada. This



critical habitat is now within the boundaries of the Piute/Eldorado Desert Wildlife Management Area (DWMA), pursuant to the Federal Endangered Species Act.

Based on desert tortoise habitat assessments, this portion of critical habitat contains very low to low desert tortoise population densities (BLM, 1990). Higher density populations in this area are concentrated primarily in washes (SWCA, 1992). In addition, lower areas of the Piute Valley contain more favorable tortoise habitat.

Potential impacts to desert tortoise populations and other roadside wildlife would be expected to occur for the approximate 10-year extension of operations. At the cessation of operations, mine vehicle traffic would cease. Wildlife populations would probably then begin to recover to their pre-impact densities. Towards this end, the Applicant has attempted to limit project traffic and potential impacts to the tortoise to the degree possible through the use of buses and vans to transport employees. Transportation provided by the mine is used by approximately 95 percent of all employees. Buses are used to transport shift workers, and vans are used for administrative and maintenance personnel. Since early 1996, the mine has implemented a 12-hour shift schedule instead of 8-hour shifts for many mine employees, further decreasing the number of trips required on the access road.

The Applicant has also attempted to reduce traffic impacts to tortoise populations through employee instruction with regard to proper travel speeds and consideration of wildlife. The Applicant has posted a speed limit of 35 miles per hour along the mine access road.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented and monitored for effectiveness. A copy of the 1995 Annual Report Memorandum on the Biological Opinion is included in Appendix H. Continued implementation of the ongoing actions described above would, in combination with the following measures adequately address potential wildlife traffic mortality impacts for the Mine Plan Amendments, reducing the impact to a less than significant level.

#### COUNTY CONDITION OF APPROVAL

61. A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented.

#### BLM STIPULATION

38. A project sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented.

This measure has already been implemented at the mine.

**Additional Mitigation Measure 3.5-3a:** Implement additional measures, if any, resulting from Section 7 consultation with FWS.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no*

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

*additional environmental impacts would occur.*

There will be no additional wildlife related impacts to the currently permitted mine operations. As currently permitted, operations, including traffic on the mine access road for employees and deliveries of supplies, would continue through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The traffic related impacts of this alternative would not differ from that for the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### **Impact 3.5-4: Lighting and Noise**

**PROPOSED ACTION:** *The Proposed Action would result in the continued use of existing artificial light and noise sources and/or creation of new light sources thereby affecting wildlife.*

The Proposed Action would require continued lighting for those portions of the facilities that

would operate on a 24-hour basis. This condition would attract some animals, such as bats, to the area to feed on insects attracted to the lights. No adverse impacts from lighting have been noted as a result of monitoring during the past 5 years of operation. No significant additional impacts are expected from continued operation proposed for the mine plan amendments.

The Proposed Action would continue to use a number of procedures to remove, distribute, and process ore. These procedures would generate noise, some of which would be of considerable intensity at the source. Blasting would occur in the mine pits. Loading and movement of vehicles would create vehicle noise between the mine pits, overburden sites, and crushing area. The crushing and conveying circuit and the milling circuit would also generate noise. This is a largely unavoidable impact of the mine.

Studies have shown that many desert wildlife species are sensitive to loud noises. Some animals, such as kangaroo rats and lizards are rendered temporarily deaf when subjected to excessive noise. This can result in increased predation of these animals by snakes and coyotes, reducing their onsite densities. In addition, project noise may interfere with animal communication noises (such as courtship and territorial vocalizations by birds). It is possible that this could influence reproductive success, but the few studies that have been done on this subject have been poorly designed and inconclusive.

Noise is attenuated by distance, atmospheric conditions, and topography, so that the primary effects of project noise would be limited to the immediate source area. The majority of noise effects are expected to be



minimal within 0.25 mile and negligible within 1 mile of the site. No significant effect on wildlife in the area is expected as a result of noise.

**Mitigation Measures:** The following measure, developed in the Previous EIS/EIR and subsequent approvals, has been implemented at the Castle Mountain Mine as a BLM Stipulation. This measure has been implemented and monitored for effectiveness, and would adequately address potential lighting impacts on wildlife for the Mine Plan Amendments.

#### COUNTY CONDITION OF APPROVAL

66. Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity.

#### BLM STIPULATION

45. Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional wildlife related impacts from light or noise to the currently permitted operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The impacts related to the continued use of artificial lighting of this alternative would not differ from those of the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.5-5: Tortoise Mortality from Ravens

**PROPOSED ACTION:** *The Proposed Action could result in potential increases in common raven populations which could adversely affect the desert tortoise.*

Concern was expressed in the Previous EIS/EIR that activities associated with the mine and increased mine-related and public traffic could lead to increases in the regional population of the common raven. Ravens are active carnivores that prey upon a wide variety of live animals including small mammals, birds, bird eggs, reptiles, amphibians, fish, and newborn livestock. They will also eat fruit and insects, which are seasonally important. They are also carrion-eating scavengers and will eat garbage when available. Carrion is a consistent food source for ravens throughout their range. Carrion sources include road-killed and winter-killed wildlife, other

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

predator kills, stillborn livestock, carcasses left by hunters, and other sources. Areas of garbage accumulation are normally included in ravens' daily foraging activities. If increased human activities provide these additional food sources, an increase in local raven population would occur.

Concern for the growth of raven populations has been expressed because ravens have been known to use tortoises for food. Ravens have apparently preyed on juvenile tortoises for years, but excessive or abnormally high rates of consumption have been recently noted. Once a raven family group presents a search image for a specific food item, this behavior can be transferred by social facilitation to other individuals, causing an impact on the available prey. In some areas of the western Mojave Desert, for example, ravens have been found to consume large numbers of young tortoises, from hatchlings up to 6 years of age. Observations by BLM staff also indicate this behavior occurs in the eastern Mojave Desert. This predation may have an impact on the population dynamics of the affected tortoise population. The BLM is currently addressing the issue of raven predation and has prepared an Environmental Assessment for selective control of individuals in the vicinity of tortoise populations.

Prolonging the traffic due to operations at the Castle Mountain Mine would increase the risk of mortality to individual animals crossing access roads, thereby potentially increasing raven use of the area. This would primarily be expected on Ivanpah Road, where the paved access permits high travel speeds. For this reason, mine-related traffic volumes are minimized by the use of the mine access road along the margin of Piute Valley, and bus/van pools. The level of public

recreational traffic that has resulted through the provision of improved access along the mine access road is unknown. The degree to which increased traffic volumes associated with a prolonged operating life of the Castle Mountain Mine could increase road kills and whether or not the availability of additional road kills would attract more ravens to the area (either permanently or temporarily) cannot reasonably be predicted. Based on raven population monitoring results to date, no such attraction appears to have occurred. Moreover, even if it were to occur, it would not be a certain conclusion that it would result in an increase in predation on young tortoises. Movement, nesting, territory size, density, and season may all affect raven behavior.

There is insufficient data on such behavior in the Mojave Desert, and BLM is currently studying raven populations to assemble this data. Raven populations on and approaching the mine site are being monitored by the project environmental staff and reported to BLM to augment data being collected elsewhere in the Mojave Desert in an effort to address the problem of raven predation on the desert tortoise.

Ravens are monitored at the mine site and along the 18-mile access road. Each day, counts are taken and activities noted such as feeding on road kill or flying. A monthly summary is submitted each year to the BLM and USFWS. A total of 58 ravens were identified along the access road in 1996.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented and



monitored for effectiveness. Continued implementation of the following measures would adequately address potential tortoise mortality impacts for the Mine Plan Amendments and reduce the impact to a less than significant level.

#### COUNTY CONDITIONS OF APPROVAL

16. All trash storage shall be maintained in closed containers.
62. Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife.
64. As part of the onsite biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven populations are occurring.

As described above, the environmental specialist monitors raven activities as part of ongoing monitoring.

#### BLM STIPULATION

40. Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** No additional potential for tortoises to be attacked would be created by the currently permitted operations.

As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** The potential impacts from ravens of this alternative would not differ from those of the Proposed Action.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.5-6: Raptor Mortality from Power Lines

**PROPOSED ACTION:** The Proposed Action could result in raptor mortality associated with power lines.

*The proposed modifications to operations would extend the duration of activities that could result in mortality to raptors due to the presence of power lines.*

As discussed in Section 3.5.1, Birds, several raptor species (falcons, eagles, vultures, hawks, and owls) are expected and known to occur within the region. The design and construction of the power distribution poles incorporated provisions for raptor safety.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Raptors are opportunistic and will use power lines and support structures for a number of purposes, especially perching and nesting. The heaviest use is as hunting perches. Studies have shown that raptors can be electrocuted by power lines; immature or sub-adult birds are the most susceptible.

**Mitigation Measures:** The following measures, which were developed in the 69kV Power Transmission Line Environmental Assessment and subsequent approvals, have been implemented at the Castle Mountain Mine as a County Condition of Approval and BLM Stipulation. These measures have been implemented and monitored for effectiveness, and adequately address potential raptor mortality impacts for the Mine Plan Amendments.

#### COUNTY CONDITION OF APPROVAL

63. Power lines shall be constructed in a manner to discourage raven nesting/roosting.

#### BLM STIPULATION

49. Design and construction of electric power distribution poles shall incorporate provisions for raptor safety.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There will be no increased potential for raptor mortality from the existing power lines. As currently permitted, the Castle Mountain Mine would continue through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The impacts of this alternative to wildlife associated with power lines would not differ from those of the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

### 3.5.3 Cumulative Impacts

The Proposed Action would contribute to cumulative impacts on wildlife by direct habitat loss and increased human disturbance. Current mining operations have disturbed approximately 545 acres of wildlife habitat; 890 acres of disturbance is currently permitted. The Proposed Action would disturb an additional 490 acres. Based on the current disturbance to wildlife habitat, the Proposed Action would result in a cumulative impact of 1,035 acres (545 acres plus 490 acres). However, as currently permitted (890 acres), the Proposed Action would result in a cumulative impact of up to 1,380 acres (890 acres plus 490 acres). In addition, other projects in the East Mojave region add to regional habitat loss for wildlife species. This could adversely affect general wildlife species and special status species of wildlife including



desert tortoise, desert bighorn sheep, and two species of bats, the California leaf-nosed bat and the Townsend's big-eared bat.

The South Overburden Site Expansion Alternative would also increase the amount of ongoing disturbance to wildlife habitat at the mine site. However, the amount of additional surface disturbance would be reduced, when compared to the Proposed Action, from 490 acres to 325 acres. The No Action Alternative would not increase the amount of ongoing disturbance to wildlife habitat associated with the current mining operations.

Desert tortoise studies concluded that habitat conditions on the mine site are marginal; lower portions of the Piute Valley are more suitable. However, conservation of desert tortoise habitat is considered critical throughout the eastern and western Mojave Desert. Mitigation and/or compensation required for the Proposed Action as well as for other projects in the vicinity aid in protecting important tortoise habitat.

Reclamation of the mine site, including revegetation and site restoration, will probably restore wildlife populations to pre-disturbance levels over time. The Castle Mountain Mine has complied with desert tortoise protection measures stipulated in the Biological Opinion issued by the FWS and MOU issued by CDFG. Ongoing wildlife protection measures and habitat restoration, along with additional mitigation measures, were developed in the Previous EIS/EIR and subsequent approvals, to address wildlife impacts for both the Proposed Action and ongoing operations.

**Mitigation Measures:** Surface disturbance associated with the Proposed Action or the South Overburden Site Expansion Alternative

would be limited to specific locations within the amended mine site boundary, as specified in the Mine Plan Amendments Application. The mortality and/or displacement of animals would be limited to the life of the mine. The site would be reclaimed in accordance with the approved Reclamation Plan. Disturbed areas will continue to be revegetated using protocol established in the ongoing Revegetation Research Program.

Mitigation measures for the desert tortoise have been implemented in compliance with the Biological Opinions issued by the FWS and the MOU issued by CDFG. In addition, a revised Biological Assessment is being prepared. Measures resulting from Section 7 consultation with FWS and Section 2081 consultation with CDFG would be implemented. No additional mitigation would be required.

**Level of Significance After Mitigation:** Less than significant.

### 3.5.4 Residual Adverse Effects

**PROPOSED ACTION:** The Proposed Action would result in the removal of approximately 490 additional acres of wildlife habitat. This impact would be mitigated through implementation of the Reclamation Plan. However, it is expected to require several decades for the habitat to recover to pre-project conditions. In addition, successful revegetation would not be possible on pit walls, resulting in a loss of approximately 85 acres of habitat comprised of native plant communities. Pit benches and floors would be revegetated in accordance with the Reclamation Plan.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Continued operation of the mine will continue the risks for wildlife mortalities associated with cyanide use, traffic, and power lines for an additional 10 years. As demonstrated through operational experience, the mitigation measures in place are very effective at minimizing such mortalities; however, individual deaths occasionally occur.

***NO ACTION ALTERNATIVE:*** Since the No Action Alternative would result in no changes to the currently permitted operations, there would be no additional residual adverse effects.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** This alternative would result in the disturbance of 285 acres of wildlife habitat. The types of impacts from surface disturbances and continued operation for an additional 10 years would be the same as for the Proposed Action.



**SECTION 3.6**  
**AIR QUALITY**

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## 3.6 AIR QUALITY

### 3.6.1 Affected Environment

#### Introduction

This section discusses regional air quality in the vicinity of Castle Mountain Mine operations and identifies the sources and quantities of air emissions expected from the proposed project. Emissions associated with mining operations fall into the following source categories:

- **Onsite Stationary:** Ore crushing, screening, and gold extraction plant operations.
- **Onsite Mobile:** Vehicle and heavy-duty equipment exhaust emissions.
- **Onsite Fugitive:** Dust from heavy-duty equipment used onsite for mining operations and wind erosion of disturbed areas.
- **Offsite Mobile:** Vehicle emissions resulting from traffic traveling to and from the Castle Mountain Mine.

The Proposed Action primarily consists of additional mining adjustment to existing mining activities. Ore processing rate, onsite heavy duty equipment use, and offsite vehicle travel will not change from existing levels; however, changes are expected in onsite vehicle travel. Evaluation of available information for the Proposed Action indicates that unpaved road travel will increase for transport of ore and overburden from the new mining areas to the processing facility and storage sites. The overall magnitude of these anticipated changes depend upon the

development alternative, and will vary from year to year.

Potential air quality impacts are assessed with respect to federal and state ambient air quality standards, and Mojave Desert Air Quality Management District (MDAQMD) rules and regulations. Analyses have been performed using methods recommended by MDAQMD, California Air Resources Board (CARB) and U.S. Environmental Protection Agency (EPA).

#### Climate and Meteorology

Castle Mountain Mine operations are situated in the Mojave Desert Air Basin (MDAB), which includes the hottest and driest portions of California. The MDAB encompasses the desert portions of San Bernardino, Kern, and Los Angeles Counties. It is separated from the coastal regions by mountain ranges, which provide a climatological boundary, but also allow transport of air contaminants from adjacent air basins (i.e., San Joaquin Valley, South Coast, and the Las Vegas Valley) into the MDAB. Existing air quality in the vicinity of the Castle Mountain Mine is affected by regional air emissions throughout the MDAB. Existing mining activities contribute fugitive dust and fuel combustion emissions generated during mining and processing operations.

Arid weather conditions typical of the MDAB result both from the topographic features mentioned previously, and from the influence of a semipermanent high-pressure area located off the west coast of North America known as the "Pacific High." During the summer months, this pressure area migrates northward and deflects most storm fronts far to the north of the MDAB through northern California and the Pacific northwest. In winter, the Pacific High decreases in intensity and moves



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southward, permitting storm fronts to move into and across the MDAB.

Seasonal changes in the MDAB are marked principally by large seasonal and diurnal temperature differences rather than precipitation. Diurnal temperatures differ by approximately 20 to 30 degrees Fahrenheit in January and 30 to 40 degrees Fahrenheit in July.

Characteristic of an arid climate, rainfall in the Castle Mountain Mine area is low, ranging from approximately 5 to 10 inches per year, and is generally associated with frontal activity. Approximately 20 to 30 frontal systems move into the northern part of the MDAB each winter. Most of these systems are relatively weak by the time they reach the basin and become more diffused as they move southward. The first front usually arrives in mid-October, with the average period of frontal activity being 5 to 6 months (CARB, 1975). Summer thunderstorms may occur when warm, moist, unstable air drifts northward from the Gulf of Mexico. Although of short duration, rainfall during thunderstorms can be intense, resulting in flash floods which can rapidly modify the terrain that is exposed to the erosive surface runoff (MDAQMD, 1991).

One of the most important factors influencing the dispersion of air pollutants emitted into the atmosphere is the prevailing wind. Wind direction can be used to determine areas that will be affected by a particular air mass, while wind speed partly controls the volume of air available for the dilution of contaminants. Desert regions such as the MDAB are inclined to be windy since little friction is generated between moving air and the low, sparse vegetation cover. In addition, rapid daytime

heating of the lower air over the desert floor leads to convective activity. This exchange of lower and upper air tends to accelerate surface winds during the warm part of the day when convection is at a maximum. During winter months, rapid nighttime cooling near the ground retards this exchange of momentum, resulting in a greater frequency of calm winds. During all seasons, prevailing wind direction is generally from the south and west (CARB, 1975; MDAQMD, 1991). Prevailing winds bring air through the mountain passes from the South Coast and San Joaquin Valley air basins. Pollutants from these air basins are carried by the wind into the desert region, affecting the air quality of the desert.

Dispersion of air pollutants can also be limited by inversion conditions which act to trap a layer of cooler air (extending from ground level to several hundred meters above ground level) beneath a layer of warm air. The MDAB is typically affected by inversion conditions resulting from rapid cooling of the earth's surface at night. This cooling does not affect the air above the first few hundred feet; therefore, the upper layer remains warmer. These inversions tend to terminate early in the day during summer, but persist throughout much of the day during the winter, when they limit the mixing in the lower atmosphere to a height of 400 to 1,200 meters (CARB, 1975).

#### **Ambient Air Quality**

Air quality is determined primarily by the types and amounts of contaminants emitted into the atmosphere, the size and topography of the local air basin, and the pollutant-dispersing properties of local weather patterns. When airborne pollutants are produced in such volume that they are not dispersed by local meteorological conditions, air quality problems result. Dispersion of pollutants in



the County area is inhibited by periodic temperature inversions and climatic conditions which also tend to carry pollutants into the MDAB from adjacent air basins. As the pollutants become more concentrated in the atmosphere, photochemical reactions occur, producing ozone ( $O_3$ ) and other oxidants.

As with ozone, a substantial fraction of  $PM_{10}$  forms in the atmosphere as a result of chemical reactions. High concentrations of both ozone and  $PM_{10}$  occur downwind of areas which emit high levels of nitrogen oxides ( $NO_x$ ), reactive organic gases (ROG), and other precursor emissions. High levels of  $PM_{10}$  in the MDAB can also result from mining, manufacturing and recreational activities which sometimes release large quantities of dust to the atmosphere.

CARB and EPA are required to designate areas of the state as "attainment," "nonattainment," or "unclassified" for state and federal standards. An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant. A nonattainment designation indicates that a pollutant concentration violated the standard at least once per year, excluding those occasions when a violation was caused by an extraordinary event. An unclassified designation indicates a lack of adequate air quality data or other information on which to base an attainment or nonattainment designation. California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS) are summarized in Table 3.6-1. State and federal attainment status designations for the MDAB are identified in Table 3.6-2.

As noted in Table 3.6-2, MDAB is designated nonattainment for ozone and  $PM_{10}$ . Emissions from processing facilities are routinely monitored on the site to comply with the MDAQMD permits C002842 and C002843. Copies of the permits are included in Appendix G. Condition #7 stipulates:

The O/O [owner/operator] shall conduct emissions testing at least once each three (3) years, during June through September, beginning in 1995. This testing shall be consistent with administrative and technical procedures described in the District's Compliance Test Procedural Manual. Mass emission rates shall not exceed 16.5 lb/h.

Air quality is not routinely monitored in the vicinity of the Castle Mountain Mine with respect to regulatory agencies such as CARB. This is due to the lack of industrial sources of pollution in the area and access difficulties associated with remote monitoring locations. Air quality data is monitored at more populated sites in the MDAQMD such as Barstow and Twenty Nine Palms.

Criteria for pollutants and the approximate ranges at which they occur are described below:

- Ozone is a toxic gas that irritates the lungs and damages materials and vegetation. Data collected in the eastern region of the MDAB indicate that levels of ozone routinely exceed national and state standards.

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TABLE 3.6-1 AMBIENT AIR QUALITY STANDARDS				
Pollutant	Averaging Time	California Standards (CAAQS) <sup>(1)</sup>	National Standards (NAAQS) <sup>(2)</sup>	
		Concentration <sup>(3)</sup>	Primary <sup>(3,5)</sup>	Secondary <sup>(3,4,6)</sup>
Ozone	1 Hour	0.09 ppm (180 ug/M <sup>3</sup> )	0.12 ppm (235 ug/M <sup>3</sup> )	Same as Primary Standards
CO	8 Hour	9.0 ppm (10 mg/M <sup>3</sup> )	9 ppm (10 mg/M <sup>3</sup> )	--
	1 Hour	20 ppm (23 mg/M <sup>3</sup> )	35 ppm (40 mg/M <sup>3</sup> )	
NO <sub>2</sub>	Annual Average	--	0.053ppm (100 mg/M <sup>3</sup> )	Same as Primary Standards
	1 Hour	0.25 ppm (470 ug/M <sup>3</sup> )	--	
O <sub>2</sub>	Annual Average	--	0.03 ppm (80 ug/M <sup>3</sup> )	--
	24 Hour	0.04 ppm (105 ug/M <sup>3</sup> ) <sup>(7)</sup>	0.14 ppm (365 ug/M <sup>3</sup> )	--
	3 Hour	--	--	0.5 ppm (1300 ug/M <sup>3</sup> )
	1 Hour	0.25 ppm (655 ug/M <sup>3</sup> )	--	--
PM <sub>10</sub>	Annual Geometric Mean	30 ug/M <sup>3</sup>	--	--
	24 Hour	50 ug/M <sup>3</sup>	150 ug/M <sup>3</sup>	Same as Primary Standards
	Annual Arithmetic Mean	--	50 ug/M <sup>3</sup>	
SO <sub>4</sub>	24 Hour	25 ug/M <sup>3</sup>	--	--
Pb	30 Day Average	1.5 ug/M <sup>3</sup>	--	--
	Calendar Quarter	--	1.5 ug/M <sup>3</sup>	Same as Primary Standards
H <sub>2</sub> S	1 Hour	0.03 ppm 42 ug/M <sup>3</sup>	--	--



**TABLE 3.6-1 (Continued)**  
**AMBIENT AIR QUALITY STANDARDS**

Pollutant	Averaging Time	California Standards (CAAQS) <sup>(1)</sup>	National Standards (NAAQS) <sup>(2)</sup>	
		Concentration <sup>(3)</sup>	Primary <sup>(3,5)</sup>	Secondary <sup>(3,4,6)</sup>
Vinyl Chloride (Chloroethene)	24 Hour	0.010 ppm (26 ug/M <sup>3</sup> )	--	--
Visibility Reducing Particles <sup>(8)</sup>	8 Hour (10 am to 6 pm,PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent. Measurement in accordance with CARB Method V.	--	--

**NOTES:**

- (1) California standards for ozone, CO, SO<sub>2</sub> (1-hour and 24-hour), NO<sub>2</sub>, PM<sub>10</sub>, and visibility reducing particles are values that are not to be equaled or exceeded (CARB, 1993)
- (2) National standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.
- (3) Equivalent units given in parentheses are based upon reference to temperatures of 25°C and a reference pressure of 760 mm mercury. Measurements of air quality are corrected to a reference temperature of 25°C and a reference of 760 mm mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
- (4) Equivalent procedure, which can be shown to the satisfaction of CARB to provide equivalent results at or near the level of the air quality standard, may be used.
- (5) National Primary Standard: The levels of air quality necessary, with an adequate margin of safety, to protect public health. Each state must attain the primary standards no later than 3 years after that state's implementation plan is approved by EPA.
- (6) National Secondary Standards: The levels of air quality necessary to protect public welfare from any known or anticipated adverse effect of a pollutant. Each state must attain the secondary standards with a "reasonable time" after the state implementation plan is approved by EPA.
- (7) At locations where state standards for oxidant and/or PM<sub>10</sub> are violated. National standards apply elsewhere.
- (8) This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range when relative humidity is less than 70 percent.

-- = No data

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<p align="center"><b>TABLE 3.6-2</b>  <b>CRITERIA POLLUTANT ATTAINMENT STATUS</b>  <b>SAN BERNARDINO PORTION OF THE MOJAVE DESERT AIR BASIN<sup>(1)</sup></b></p>		
Pollutant and Averaging Time	Attainment Status <sup>(2)</sup>	
	Federal	State
<b>NO<sub>2</sub><sup>(3)</sup></b> • 1 Hour • Annual Average <b>SO<sub>2</sub><sup>(3)</sup></b> • 1 Hour • 3 Hours • 24 Hours • Annual Average <b>CO</b> • 1 Hour • 8 Hours <b>PM<sub>10</sub></b> • 24 Hours • Annual Geometric Mean • Annual Arithmetic Mean <b>O<sub>3</sub></b> • 1 Hour	- A - A A A A A N - N N	A - A - A - A A N N - N

**NOTES:**

(1) CARB, 1991.

(2) Attainment Status Designation:

- = No Standard

A = Attainment

N = Nonattainment

(3) Regulated as a nonattainment pollution

(NO<sub>2</sub> is a precursor to both ozone and PM<sub>10</sub>; SO<sub>2</sub> is a precursor to PM<sub>10</sub>).

- Carbon monoxide (CO) is a gas, produced almost entirely from automobiles, that interferes with the transfer of oxygen to the brain. Peak levels of CO occur in winter throughout MDAB, and are highest where there is heavy traffic. Regional monitoring data indicate that CO levels are not a concern in the vicinity of the Castle Mountain Mine.
- Nitrogen dioxide (NO<sub>2</sub>) is a gas that can cause breathing difficulties at high levels. Peak readings of NO<sub>2</sub> occur in areas that

have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations). MDAB is designated as an attainment area for both state and national NO<sub>2</sub> standards.

- Particulate matter (PM<sub>10</sub>) consists of extremely small suspended particles or droplets 10 microns or smaller in diameter that can lodge in lungs, contributing to respiratory problems. PM<sub>10</sub> arises from such sources as road dust, diesel soot,



combustion products, abrasion of tires and brakes, construction operations, and wind storms. It is also formed in the atmosphere from  $\text{NO}_2$  and sulfur dioxide ( $\text{SO}_2$ ) reactions with ammonia.  $\text{PM}_{10}$  scatters light and significantly reduces visibility.  $\text{PM}_{10}$  poses a serious health hazard, alone or in combination with other pollutants. More than half of the smallest particles inhaled will be deposited in the lungs and can cause permanent lung damage.  $\text{PM}_{10}$  can also have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of an absorbed toxic substance.  $\text{PM}_{10}$  levels regularly exceed ambient air quality standards in the MDAB. The MDAB is designated as nonattainment for  $\text{PM}_{10}$ .

- Sulfur dioxide ( $\text{SO}_2$ ) is a gas, produced by combustion of sulfur-containing fuels, smelting of sulfur-bearing metal ores, and various industrial processes, which can cause aggravation of respiratory diseases (i.e., asthma and emphysema) and reduced lung function. The entire MDAB is designated an attainment area for  $\text{SO}_2$ .
- Lead (Pb) in the atmosphere occurs as particulate matter. Sources of potential Pb emissions include the combustion of leaded gasoline, manufacturing of batteries, paint, ink, ceramics, and ammunition and secondary lead smelters. With the phase-out of leaded gasoline, secondary lead smelters, and battery recycling and manufacturing facilities are becoming lead-emission sources of greater concern. Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated

with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurologic dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Lead levels in the project vicinity of the Castle Mountain Mine are below national and state standards.

### Regulatory Overview

Air quality issues in the MDAB are addressed through federal, state, local, and regional government agencies. These agencies work jointly as well as individually to reduce air pollution through legislation, regulation, policy making, education, and a variety of programs. These agencies include:

- **EPA:** Responsible for setting and enforcing the national standards for atmospheric pollutants, including the Clean Air Act, as amended.
- **CARB:** The California Air Resources Board is a part of the California Environmental Protection Agency (Cal-EPA) and responsible for assuring implementation of the California Clean Air Act, responding to federal regulations, and regulating emission standards.
- **MDAQMD:** The Mojave Desert Air Quality Management District is primarily responsible for comprehensive air pollution control in MDAB. MDAQMD works directly with federal, state, and local agencies.
- **Local governments:** Have the authority and responsibility to reduce air pollution through their local land use decision-making authority.

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Air emissions from Castle Mountain Mine operations are subject to various federal, state, and local rules and regulations as implemented through provisions of the Federal Clean Air Act, California Clean Air Act, and the Air Quality Attainment Plan (AQAP) adopted by MDAQMD in 1991. The following sections present an overview of these rules and regulations.

#### *Federal Clean Air Act*

The Federal Clean Air Act was established in an effort to assure that acceptable levels of air quality are maintained in all areas of the United States. These acceptable levels are based upon health-related exposure levels and are referred to as National Ambient Air Quality Standards (NAAQS). The NAAQS establish maximum allowable concentrations of specific pollutants in the atmosphere and characterize the level of exposure deemed safe to the public. The NAAQS set standards for the following pollutants:

- Nitrogen dioxide (NO<sub>2</sub>)
- Sulfur dioxide (SO<sub>2</sub>)
- Carbon monoxide (CO)
- Particulate matter less than 10 microns, aerodynamic diameter (PM<sub>10</sub>)
- Ozone (O<sub>3</sub>)
- Lead (Pb)

Ambient ozone concentrations result from the photochemical reaction of NO<sub>2</sub> with ROG. NAAQS have not been established for ROG.

Primary and secondary NAAQS have been established and are shown in Table 3.6-1. Primary standards reflect levels of air quality deemed necessary by the EPA to provide an adequate margin of safety to protect public health. Areas found to be in violation of primary standards are termed "nonattainment

areas". Secondary standards reflect levels of air quality necessary to protect public welfare from the known or anticipated adverse effects of a pollutant.

#### *California Clean Air Act*

Under the Federal Clean Air Act, state and local authorities have primary responsibility for assuring that their respective regions are in attainment of, or have a verifiable plan to attain, the NAAQS. The Federal Clean Air Act also provides state and local agencies authority to promulgate more stringent ambient air quality standards. The California Ambient Air Quality Standards (CAAQS), which are included in Table 3.6-1, establish standards for the following pollutants, in addition to those established by the NAAQS:

- Hydrogen sulfide (H<sub>2</sub>S)
- Vinyl chloride
- Sulfates (SO<sub>4</sub>)
- Visibility-reducing particles

The California Clean Air Act requires attainment of the CAAQS by the earliest possible date.

#### *MDAQMD Air Quality Attainment Plan*

MDAQMD has local regulatory review and primary authority over potential sources of air pollution within the County. CARB serves as a technical review and advisory agency, providing technical advice to MDAQMD when necessary and offering guidance when MDAQMD regulations are not sufficiently detailed to address a particular issue.

Under the provisions of the Federal and California Clean Air Acts, areas not in attainment of the NAAQS or CAAQS are required to prepare an AQAP. An AQAP establishes an area-specific program to control



existing and proposed sources of air emissions so that the NAAQS or CAAQS may be attained by the applicable target date. The County has been designated as a federal and California nonattainment area for ozone and  $PM_{10}$  (Table 3.6-2). To comply with the California and Federal Clean Air Acts, the District released an AQAP in 1991. The 1991 AQAP includes stationary source, mobile source, and transportation control measures to reduce emissions of air pollutants.

Supplemental "reasonable further progress" plans were prepared by MDAQMD in October 1994 in response to the requirements of the 1990 Federal Clean Air Act Amendments, which call for attainment of the federal ozone standard by the year 2007.

The 1991 AQAP does not address control strategies for  $PM_{10}$ . A plan addressing  $PM_{10}$  attainment for the Lucerne Valley and other western areas in the MDAB was recently released July, 1995 by MDAQMD. As part of the July, 1995 plan, MDAQMD recommended federal reclassification of rural eastern Mojave areas from Nonattainment to "Unclassifiable/Attainment" status. Attainment strategies in the July, 1995 plan focused instead on the western portions of the MDAB and populated areas of the eastern MDAB. Since  $PM_{10}$  attainment problems in the eastern portion of the MDAB are widely recognized to be attributable to windblown dust rather than human activity, no similar control strategies or attainment plans are anticipated for the Castle Mountain Mine vicinity.

### 3.6.2 Environmental Consequences and Mitigation Measures

#### Standards of Significance

Standards for determining the significance of potential air quality impacts are based on guidance provided by MDAQMD staff, and recommendations published by the South Coast Air Quality Management District (SCAQMD) in its CEQA Air Quality Handbook (SCAQMD, 1993). The Proposed Action would have a significant effect on air quality if it would:

3.6A Exceed one of the following quantitative emissions thresholds:

- 25 tons per year of ROG
- 25 tons per year of  $NO_x$
- 100 tons per year of CO
- 15 tons per year of  $PM_{10}$

3.6B Exceed one of the following qualitative thresholds:

- Interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected exceedance of standards.
- Generate vehicle trips that cause a CO hot spot.
- Have the potential to create an objectionable odor over 10 dilutions of threshold (i.e., a contaminated air sample diluted by volume 10 times with uncontaminated air) that could affect sensitive receptors.
- Have the potential for an accidental release of air toxic emissions or acutely hazardous materials posing a

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threat to public health and safety; result in emission of a toxic air contaminant that is on a federal or state air toxic list; or result in emission of carcinogenic or toxic air contaminants that individually or cumulatively exceed the individual cancer risk of 10 in 1 million.

- Inconsistency with the AQAP.

#### Project-Specific Analysis

Potential air contaminant emissions have been estimated for Existing Conditions, the Proposed Action, and the South Overburden Site Expansion Alternative and are shown in Tables 3.6-3, 3.6-4, and 3.6-5, respectively.

Emissions have been estimated using standard methods recommended by MDAQMD, CARB and EPA. Detailed calculations and assumptions used to prepare these air contaminant emission summaries are included in Appendix F, Air Quality Data.

The analyses presented in this section focus upon the evaluation of potential impacts directly associated with proposed site modifications. The proposed site modification primarily consists of additional mining adjacent to completed mine activities. Minor fluctuations in offsite vehicle travel, onsite heavy duty equipment use, and ore processing rate are expected from existing permitted levels. Changes are expected in onsite ore and overburden haul vehicle travel. Air contaminant emissions associated with the Castle Mountain Mine fall into the following categories:

#### Onsite Stationary Emissions

- **Description:** Ore crushing, screening, and gold extraction plant operations. Current MDAQMD Permits to Operate (PTOs) for these activities allow processing of 15,000 tons of ore per peak day, and 4.5 million tons of ore per year.
- **Calculations and Assumptions:** Air contaminant emissions estimates summarized in Tables 3.6-3 through 3.6-5 were derived from: (1) the *Final New Source Review* document prepared on behalf of the Castle Mountain Mine by MDAQMD in 1991 (MDAQMD 1991); and (2) documentation prepared by Viceroy Gold Corporation in support of a Permit to Construct Application to MDAQMD for modifications to the ore processing facilities in 1993 (Viceroy 1993). Available data indicate that all current PTOs held by the Castle Mountain Mine have been issued by MDAQMD on the basis of the preceding technical documents. Therefore, these documents accurately represent current and potential air contaminant emissions from mining and ore processing operations.

Emissions from the ore processing facility primarily consist of  $PM_{10}$ , and are controlled by fabric filtration, water sprays, and covers. These air pollution control systems are considered best available control technology (BACT) and range in efficiency from 70 percent (covers) to more than 99 percent (baghouses).



TABLE 3.6-3 ESTIMATED AIR CONTAMINANT EMISSIONS - EXISTING PERMIT LIMIT <sup>(1)</sup>										
Emission Source	Pounds Per Peak Day					Tons Per Year				
	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>
<b>Onsite Stationary Exhaust and Fugitive Sources</b>										
Ore Processing Equipment					195.6					22.2
Emergency Generator, Misc. Equipment	3.3	20.6	0.0	9.4	0.3	0.6	3.7	0.0	1.7	0.1
Diesel Storage and Transfer Losses	0.4					0.1				
<b>Onsite Mobile Exhaust Sources</b>										
Diesel-Powered Equipment Exhaust	71.4	2188.2	148.0	434.2	65.9	11.2	343.3	23.3	68.1	10.4
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--	0.5	0.2	--	0.4	--
<b>Onsite Fugitive Dust Sources</b>										
Mining Operations (Drilling, Blasting, Loading)					168.7					25.5
Haul Roads					21.0					3.0
Ore and Overburden Dumping					119.4					17.9
Wind Erosion (Disturbed Areas, Stockpiles)					12.0					2.3
<b>TOTAL</b>	<b>77.5</b>	<b>2210.1</b>	<b>148.0</b>	<b>445.6</b>	<b>582.9</b>	<b>12.4</b>	<b>347.2</b>	<b>23.3</b>	<b>70.2</b>	<b>81.3</b>

NOTES:

<sup>(1)</sup> Operational parameters, emission factors, and assumptions used to prepare the emissions summarized in this table are documented in Appendix F.

**TABLE 3.6-4**  
**ESTIMATED AIR CONTAMINANT EMISSIONS - PROPOSED ACTION - 2004 OPERATIONS<sup>(1,2)</sup>**

Emission Source	Pounds Per Peak Day					Tons Per Year				
	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>
<b>Onsite Stationary Exhaust and Fugitive Sources</b>										
Ore Processing Equipment					195.6					22.2
Emergency Generator, Misc. Equipment	3.3	20.6	0.0	9.4	0.3	0.6	3.7	0.0	1.7	0.1
Diesel Storage and Transfer Losses	0.4					0.1				
<b>Onsite Mobile Exhaust Sources</b>										
Diesel-Powered Equipment Exhaust	76.7	2345.0	150.8	470.6	70.2	12.0	367.8	23.7	73.7	11.1
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--	0.5	0.2	--	0.4	--
<b>Onsite Fugitive Dust Sources</b>										
Mining Operations (Drilling, Blasting, Loading)					168.7					25.5
Haul Roads					26.0					4.0
Ore and Overburden Dumping					119.4					17.9
Wind Erosion (Disturbed Areas, Stockpiles)					12.0					2.3
<b>TOTAL</b>	<b>82.8</b>	<b>2366.9</b>	<b>150.8</b>	<b>482.0</b>	<b>592.2</b>	<b>13.2</b>	<b>371.7</b>	<b>23.7</b>	<b>75.8</b>	<b>83.0</b>

## NOTES:

- (1) Operational parameters, emission factors, and assumptions used to prepare the emissions summarized in this table are documented in Appendix F.
- (2) Estimated emissions summarized in this table are calculated assuming full implementation of the mitigation measures described in Section 3.6-2 and Appendix F.



TABLE 3.6-5 ESTIMATED AIR CONTAMINANT EMISSIONS - SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE - 2003 OPERATIONS <sup>(1,2)</sup>										
Emission Source	Pounds Per Peak Day					Tons Per Year				
	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>
<b>Onsite Stationary Exhaust and Fugitive Sources</b>										
Ore Processing Equipment					195.6					22.2
Emergency Generator, Misc. Equipment	3.3	20.6	0.0	9.4	0.3	0.6	3.7	0.0	1.7	0.1
Diesel Storage and Transfer Losses	0.4					0.1				
<b>Onsite Mobile Exhaust Sources</b>										
Diesel-Powered Equipment Exhaust	91.1	2776.4	158.6	570.8	82.2	14.3	435.1	25.0	89.4	12.9
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--	0.5	0.2	--	0.4	--
<b>Onsite Fugitive Dust Sources</b>										
Mining Operations (Drilling, Blasting, Loading)					168.7					25.5
Haul Roads					40.0					6.0
Ore and Overburden Dumping					119.4					17.9
Wind Erosion (Disturbed Areas, Stockpiles)					12.0					2.3
<b>TOTAL</b>	<b>97.2</b>	<b>2798.3</b>	<b>158.6</b>	<b>582.2</b>	<b>618.2</b>	<b>15.5</b>	<b>439.0</b>	<b>25.0</b>	<b>91.5</b>	<b>86.8</b>

NOTES:

- (1) Operational parameters, emission factors, and assumptions used to prepare the emissions summarized in this table are documented in Appendix F.
- (2) Estimated emissions summarized in this table are calculated assuming full implementation of the mitigation measures described in Section 3.6-2 and Appendix F.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

#### *Onsite Mobile Emissions*

- **Description:** Vehicle and heavy-duty equipment exhaust emissions comprise this category, which includes onsite employee vehicles, ore and overburden haul trucks, and mining equipment (i.e., dozers, loaders, scrapers, graders, etc.). Emissions from this equipment are dependent upon the removal rate of ore materials and overburden from the mine, and the distance which these materials must be hauled for delivery to the ore processing facility or overburden storage sites. The Proposed Action calls for minor fluctuations in ore production rate, as compared with existing conditions. However, haul distances from the mine to the ore processing facility and the overburden storage sites will vary with the new site design, thereby affecting potential engine exhaust emissions from haul trucks. Engine exhaust emissions from other onsite vehicles and heavy duty equipment are not expected to change for the Proposed Action.
- **Calculations and Assumptions:** Engine exhaust emissions were derived from supporting documentation accompanying the permit applications highlighted in the preceding discussion (MDAQMD 1991, Viceroy 1993). Haul truck diesel engine exhaust emissions were estimated for the year during which anticipated haul truck mileage is expected to peak (i.e., Proposed Action - 2004, South Overburden Site Expansion Alternative - 2003).

#### *Onsite Fugitive Emissions*

- **Description:** This category includes dust ( $PM_{10}$ ) generated by drilling, blasting,

loading and dumping of haul trucks, vehicle travel on unpaved roads, and wind erosion. Of these potential emission sources, changes attributable to the Proposed Action are expected for the haul trucks, due to alternate haul road configuration.

- **Calculations and Assumptions:** Fugitive  $PM_{10}$  emissions were derived from supporting documentation accompanying the permit applications highlighted in the preceding discussion (MDAQMD 1991, Viceroy 1993). Haul truck fugitive  $PM_{10}$  emissions were estimated for the year during which anticipated haul truck mileage is expected to peak (i.e., Proposed Action - 2004, South Overburden Site Expansion Alternative - 2003).

Wind erosion emissions for the Proposed Action are not expected to increase. Although the overall area of total surface disturbance will increase, the rate of mining will remain at existing levels. Therefore, the relative size of *active* mining and overburden storage sites will not increase. Experience at surface mines, landfills, and other sites subject to surface disturbances indicates that soon after an area is disturbed, fine soil particles typically subject to wind erosion are easily disaggregated and released to the atmosphere upon exposure to air currents. However, after approximately 60 to 120 days (depending on site conditions) the potential for further dust emissions becomes greatly reduced. This results from the eventual depletion of smaller particles. Also, natural moisture and dust control water promote the aggregation and cementation of the remaining fine materials to larger particles. Therefore,



areas which have been disturbed and treated using dust control measures, and are left undisturbed for periods longer than one year are typically assumed to no longer be a significant source of potential wind erosion emissions. Areas disturbed on a more frequent basis or in close proximity to mining operations are considered to be potential sources of wind erosion emissions.

Where feasible, the applicant employs a variety of technologies to control onsite fugitive dust emissions, including minimizing the drop distance when loading and unloading trucks, enforcement of an average speed of 15 miles per hour, regular grading of roads, application of soil stabilizers (e.g., magnesium chloride), watering, reclamation/revegetation of obsolete haul roads and inactive mine or overburden disposal areas.

#### ***Offsite Mobile Emissions***

- **Description:** Vehicle exhaust emissions from employee, supply and product transport vehicles traveling to and from the Castle Mountain Mine are included in this category.
- **Calculations and Assumptions:** Minor fluctuations in the existing ore production rate and number of site employees will occur as a result of the Proposed Action. As noted in the project description, daily offsite vehicle traffic for the operating mine is approximately 55 vehicles per day at the site, mostly related to employee transportation. The Castle Mountain Mine is situated in a rural setting, and offsite vehicle traffic uses roadways which do not experience heavy use, and do not cross

busy intersections. Therefore, carbon monoxide "hot spots" and related air quality problems typically associated with offsite vehicle exhaust emissions do not have the potential to occur.

Table 3.6-6 summarizes the net emissions increases between existing conditions (Table 3.6-3) and the proposed project alternatives (Tables 3.6-4 and 3.6-5), and compares project emissions to MDAQMD quantitative significance thresholds.

#### **Impact 3.6-1: Increases in Air Contaminant Emissions**

As background to this discussion, the potential air contaminant emissions associated with the Proposed Action and South Overburden Site Expansion Alternative are compared with quantitative emissions thresholds established by MDAQMD. These emission thresholds are associated with the process whereby MDAQMD evaluates new sources of potential air contaminant emissions to determine whether emission controls, process limitations, or other strategies may be warranted to ensure that ambient air quality standards in the region will not be significantly degraded by proposed new and modified air contaminant emission sources. Another name for this procedure is "New Source Review." Triggering of the quantitative emission thresholds highlighted in this discussion does not indicate that a project is not capable of operating in compliance with state and federal ambient air quality standards.

Triggering of the thresholds does indicate that further review by MDAQMD may be needed to determine whether the process and emission controls adopted in the project design will be

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

TABLE 3.6-6 COMPARISON OF NET EMISSION INCREASES TO SIGNIFICANCE THRESHOLDS					
Scenario	Estimated Emission Rate (tons/year)				
	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>
<b>Estimated Emissions</b>					
Existing Permit Limit	12.4	347.2	23.3	70.2	81.3
Proposed Action	13.2	371.7	23.7	75.8	83.0
South Overburden Site Expansion Alternative	15.5	439.0	25.0	91.5	86.8
<b>Significance Thresholds</b>	25.0	25.0	NA	100.0	15.0
<b>Total Project Emissions Greater than Threshold?</b>					
Proposed Action	No	Yes	NA	No	Yes
South Overburden Site Expansion Alternative	No	Yes	NA	No	Yes
<b>Net Emission Increase (Decrease)</b>					
Proposed Action versus Existing Conditions	0.8	24.5	0.4	5.6	1.7
South Overburden Site Expansion Alternative versus Existing Conditions	3.1	91.8	1.7	21.3	5.5
<b>Net Emission Increase Greater Than Threshold?</b>					
Proposed Action versus Existing Conditions	No	No	NA	No	No
South Overburden Site Expansion Alternative versus Existing Conditions	No	Yes	NA	No	No

adequate to ensure that the proposed new or modified project will not contribute to the violation of ambient air quality standards in the region. MDAQMD is prohibited by the Federal Clean Air Act from granting air quality permits to new or modified sources that have the potential to contribute to the violation of ambient air quality standards.

**PROPOSED ACTION:** *The Proposed Action would contribute to increased emissions of fugitive dust and diesel engine exhaust associated with ore and overburden haul truck activity.*

If the existing permit for the Castle Mountain Mine is not extended by the Proposed Action, regional air contaminant emissions would decrease by the quantities shown in Table 3.6-3. As shown in Table 3.6-6, the mine-related emissions summarized in Table 3.6-4 would represent a significant

increase when compared to potential conditions if the mine was not operating (i.e., zero emissions). Therefore, from a CEQA perspective, air contaminant emissions associated with the Proposed Action represent a significant air quality impact.

However, from an air quality perspective, the Castle Mountain Mine is a permitted facility which has been evaluated and approved by the MDAQMD, and is included in the MDAQMD's emission inventories representing baseline air quality conditions for the area. These emission inventories are used by MDAQMD to formulate and track compliance with their AQMP. The net emissions increase between existing mining activities and the Proposed Action is evaluated in Table 3.6-6, and increases are compared with MDAQMD quantitative significant emission thresholds discussed previously in this chapter. Data presented in Table 3.6-6



demonstrate that net air contaminant emissions increases associated with the Proposed Action, that is, the extent to which emissions would be increased over those of the current operation, will not exceed the significant emission thresholds. Therefore, if the permit for the Castle Mountain Mine were not set to expire in December 2000, the net emission increases associated with the Proposed Action would not be significant.

In summary, air contaminant emissions associated with the Proposed Action are, from a CEQA perspective, significant. However, when compared with contaminant emissions associated with existing Castle Mountain Mine activities, current ambient air quality in the vicinity of the mine will not change significantly as a result of the Proposed Action.

**Mitigation Measures:** Continued implementation of the following measures developed in the Previous EIS/EIR and incorporated into the project as Conditions of Approval and Stipulations, and subsequent approvals and special conditions associated with PTOs issued by MDAQMD would reduce emissions. However, emissions would not be reduced to less than significant levels.

The data shown in Table 3.6-7 illustrates the importance of these mitigation measures in reducing potential facility emissions.

#### COUNTY CONDITIONS OF APPROVAL

33. The Applicant shall apply to the MDAQMD and obtain the required permits for the installation and operation of all stationary fossil fuel equipment used on site.
34. The Applicant shall submit detailed drawings and specifications to the MDAQMD regarding the type

of equipment that will be purchased and particle collection system that will be used.

71. A number of measures shall be incorporated into the project design to control the generation of PM<sub>10</sub> particulates. They include:
  - a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.
  - b. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.
  - c. Speed restrictions shall be enforced on mine roads to minimize surface disturbance of the roadways.
  - d. Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.
  - e. Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.
  - f. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the MDAQMD for review before use. The debris collecting devices shall have a minimum design efficiency of 90 percent.
  - h. Blasting during high winds shall be minimized or curtailed to minimize wind-blown dust.
  - i. The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind-blown dust.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

TABLE 3.6-7 AIR POLLUTION CONTROL EFFICIENCIES - PROPOSED ACTION - 2004 OPERATIONS <sup>(1)</sup>					
Emission Source	Pounds Per Peak Day				
	ROG	NO <sub>x</sub>	SO <sub>2</sub>	CO	PM <sub>10</sub>
<b>UNCONTROLLED EMISSIONS</b>					
<b>Onsite Stationary Exhaust and Fugitive Sources</b>					
Ore Processing Equipment					5363.4
Emergency Generator, Miscellaneous Equipment	5.5	48.9	0.0	31.6	0.3
Diesel Storage and Transfer Losses	0.4	--	--	--	--
<b>Onsite Mobile Exhaust Sources</b>					
Diesel-Powered Equipment Exhaust	76.7	2345.0	150.8	470.6	70.2
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--
<b>Onsite Fugitive Dust Sources</b>					
Mining Operations (Drilling, Blasting, Loading)					274
Haul Roads					520
Ore and Overburden Dumping					128.8
Wind Erosion (Disturbed Areas, Stockpiles)					103.4
<b>TOTAL UNCONTROLLED EMISSIONS</b>	<b>85.0</b>	<b>2395.2</b>	<b>150.8</b>	<b>504.2</b>	<b>6460.1</b>
<b>EMISSION REDUCTIONS (NET CONTROL EFFICIENCY)</b>	<b>2.2 (3%)</b>	<b>28.3 (1%)</b>	<b>0.0 (0%)</b>	<b>22.2 (4%)</b>	<b>5867.9 (91%)</b>
<b>TOTAL CONTROLLED EMISSIONS</b>	<b>82.8</b>	<b>2366.9</b>	<b>150.8</b>	<b>482.0</b>	<b>592.2</b>

NOTE:

- (1) Emissions summarized in this table were calculated assuming that none of the adopted mitigation measures described in Section 3.6-2 are implemented. Assumptions used to prepare this table are documented in Appendix F.
- (2) Derivation of emission control efficiencies is documented in Appendix F.

- j. Dust suppression for secondary/tertiary ore crushing operations shall be controlled using baghouses constructed to specifications acceptable to the MDAQMD. [DEIR p. 6.6-1 and SDEIR p. 3-29.]
72. Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring revegetation until operations are completed. [DEIR p. 3.2-48 to 3.2-53.]
75. Emissions from mobile equipment and vehicular engines shall be controlled by:
  - a. Using only low sulfur fuels.
  - b. Implementing a routine maintenance program to avoid operating inefficiencies.
  - c. Using busing/van pooling. [DEIR p. 6.6-3.]

#### BLM STIPULATIONS

51. A number of measures shall be incorporated into the project design to control the generation of PM<sub>10</sub> particulates. They include: [DEIS p. 6.6-1; SDEIS p. 3-29.]
  - a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.
  - b. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.
  - c. Speed restrictions of 35 mph or less shall be enforced on mine roads to minimize surface disturbance of the roadways.
  - d. Vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.



- e. Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.
  - f. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the MDAQMD for review before use. The debris collection devices shall have a minimum design efficiency of 90 percent.
  - g. The live storage portion of the coarse ore stockpile shall be covered to minimize windblown dust.
  - h. Blasting during high winds shall be minimized or curtailed to minimize windblown dust.
  - i. The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind blown dust.
  - j. Dust suppression for secondary/tertiary ore crushing operations shall be controlled using baghouses constructed to specifications acceptable to the MDAQMD.
53. As required by the MDAQMD,  $PM_{10}$  concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to the MDAQMD to demonstrate that the project is not violating ambient air quality standards. [DEIS p. 6.6-2.]
54. Permanent on-site power shall be generated using propane or natural gas generators. [SDEIS p. 3-29.]
55. Emissions from mobile equipment and vehicular engines shall be controlled by: [DEIS p. 6.6-3.]
- a. Using only low sulfur fuels.
  - b. Implementing a routine maintenance program to avoid operating inefficiencies.
  - c. Using busing/van pooling.

### MDAQMD SPECIAL CONDITIONS

B02293-1. Materials processed (blasting, open pit material loading by front end loaders, transport from open pit mine to the crusher/storage area, and ore dumping to crusher/storage area) shall contain sufficient natural and/or added moisture to ensure compliance with District Rules 401, 402, and 403.

B02293-2. The bin which receives ore from the 120 ton trucks shall not be filled unless the water sprays are functioning prior to dumping.

B02293-3. Fugitive dust control shall be a routine, day-to-day operation for dust generated by vehicular traffic on unpaved roads shall be effected from a water cannon and/or traditional water truck and/or the application of chemical stabilizers as a minimum. A water cannon truck shall be available to mitigate the open pit loading by front end loaders to trucks.

B02293-4. Pit mining operations shall be restricted to 360,000 tons per week at a rate of 120 hours per week (but no more than 20 hours per day). The owner/operator (O/O) shall employ surveying to provide monthly estimates of ore removed. These estimates shall be logged, kept current on-site for a minimum of 2 years and provided to District personnel on request. Blasting shall be restricted to daylight hours only.

B02293-5. The O/O shall be restricted to hauling materials from the pit mine to the crusher/storage area to a rate of 90,000 ton/week (750 haul truck trips @ 120 tons each). The O/O shall log the number of truckloads, maintain the log on-site for a minimum of 2 years, and provide it to District personnel on request. No additional mitigation would be necessary.

***Additional Mitigation Measure 3.6-1a:*** All internal combustion engine-driven equipment and vehicles shall be maintained in accordance with the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

**Level of Significance After Mitigation:** Significant and unavoidable. This impact exceeds the threshold established by Standard of Significance 3.6A.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional air quality impacts would occur. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan. Air quality impacts associated with mining disturbances would cease upon completion of reclamation activities.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would contribute to increased emissions of fugitive dust and diesel engine exhaust.*

If the existing permit for the Castle Mountain Mine is not extended, regional air contaminant emissions would decrease by the quantities shown in Table 3.6-3. As shown in Table 3.6-6, the mine-related emissions summarized in Table 3.6-5 would represent a significant increase when compared to potential conditions if the mine was not

operating (i.e., zero emissions). Therefore, from a CEQA perspective, air contaminant emissions associated with this action represent a significant air quality impact.

As with the Proposed Action, net emission increases between existing mining activities and this alternative were evaluated, and the results of this evaluation are presented in Table 3.6-6. Data presented in Table 3.6-6 demonstrate that net air contaminant emissions increases associated with this alternative will exceed the significant emission threshold for NO<sub>x</sub>. This represents a significant air quality impact. Comparison of estimated emissions for Onsite Mobile Exhaust Sources in Tables 3.6-3 and 3.6-5 indicates that NO<sub>x</sub> emissions impacts for this alternative are directly associated with the increased distance required to haul overburden materials to the South Overburden Site. Based on data summarized in the air quality technical appendix, total haul vehicle miles traveled estimated for the Proposed Action are approximately 5.5 million miles, while haul vehicle miles for this alternative will be approximately 7.5 million miles.

**Mitigation Measures:** In addition to the mitigation measures listed for the Proposed Action, implement the following additional mitigation measure:

**Additional Mitigation Measure 3.6-1a:** All internal combustion engine-driven equipment and vehicles shall be maintained in accordance with the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.

This measure would reduce project-related NO<sub>x</sub> emissions increases, but not to a less than significant level.



**Level of Significance After Mitigation:** Significant and unavoidable. This impact exceeds the threshold established by Standard of Significance 3.6A.

### **Impact 3.6-2: Ambient Air Quality Standards**

**PROPOSED ACTION:** *Air contaminant emissions associated with the Proposed Action would not affect the attainment status of Ambient Air Quality Standards in the MDAB.*

Based on the conclusions discussed for Impact 3.6-1, air contaminant emissions associated with the Proposed Action are significant. This determination was based on the fact that total project emissions exceed the quantitative emission thresholds established by MDAQMD for  $\text{NO}_x$  and  $\text{PM}_{10}$ . It was explained that the triggering of these thresholds does not necessarily indicate a project is incapable of operating in compliance with state and federal ambient air quality standards. Instead, further review may be needed to determine whether the process and emission controls adopted in the project design will be adequate to ensure that the proposed new or modified project will not contribute to the violation of ambient air quality standards in the region.

Comprehensive ambient air quality modeling analyses were performed in support of the Previous EIS/EIR to evaluate the significance of fugitive dust and diesel engine exhaust contaminants emitted by the Castle Mountain Mine. The analyses concluded that ambient air quality standards would not be exceeded as a result of the proposed mine operations. The modeling analyses were based on a more restrictive site boundary than the Proposed Action (the proposed site boundary is

presented in Section 2.2), and assumed that electric power would be supplied to the mine operations via onsite diesel generators (these generators were eliminated from the actual project due to accessibility of commercial electricity). The Castle Mountain Mine was issued air quality permits to construct and operate by the MDAQMD on the basis of these modeling results. MDAQMD is prohibited by the Federal Clean Air Act from granting air quality permits to new or modified sources that have the potential to contribute to the violation of ambient air quality standards. Available mine and MDAQMD records indicate that the mine has operated in compliance with their permits, and within the guidelines of MDAQMD rules and regulations.

Since initial construction and operation of the Castle Mountain Mine, MDAQMD in 1995, proposed relaxing the  $\text{PM}_{10}$  attainment designation of the region in which the mine is located from Nonattainment to "Unclassified/Attainment." This action signaled that the  $\text{PM}_{10}$  attainment difficulties experienced in the populated regions of the MDAB are not considered by MDAQMD to be applicable to the eastern rural region in which the Castle Mountain Mine is located.

Based on the net emissions increase analysis summarized in Table 3.6-6, the Proposed Action represents an insignificant increase of air contaminant emissions over existing conditions. Ambient air quality in the vicinity of the mine may improve marginally when mine operations cease. However, based on the modeling results prepared for the Previous EIS/EIR, the compliance history of existing operations, and ancillary issues mentioned in the preceding discussion, the Proposed Action will not have a significant additive effect on



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

regional air quality that would affect attainment of air quality goals.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional air quality impacts would occur. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan. Air quality impacts associated with mining disturbances would cease upon completion of reclamation activities.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *Air contaminant emissions associated with increased haul truck-related diesel engine exhaust for this alternative may affect the attainment status of Ambient Air Quality Standards in the MDAB.*

Based on the preceding discussion regarding the Proposed Action, the South Overburden Site Expansion Alternative will not have a significant additive effect on regional  $PM_{10}$  levels in the vicinity of the Castle Mountain Mine. However, based on the net emissions increase analysis summarized in Table 3.6-6, this alternative will result in a significant increase of  $NO_x$  emissions over existing conditions. This condition is directly associated with the increased distance required to haul overburden to the South Overburden Site. Based on data summarized in the air quality technical appendix, total haul vehicle miles traveled estimated for the Proposed Action are approximately 5.5 million miles, while haul vehicle miles for this alternative will be approximately 7.5 million miles.  $NO_x$  is a precursor to the formation of ozone, a pollutant for which the MDAB exceeds the NAAQS. The quantitative significant emission thresholds are directly associated with standards established in MDAQMD's AQAP. The AQAP has been established for the purpose of achieving compliance with the NAAQS and CAAQS. Therefore, the South Overburden Site Expansion Alternative may have an additive effect on regional and local air quality. This represents a significant air quality impact.

$NO_x$  emissions impacts for this alternative are directly associated with the increased distance required to haul overburden materials to the South Overburden Site.

**Mitigation Measures:** In addition to the mitigation measures listed for the Proposed Action, Impact 3.6-1, implement the following additional mitigation measure:

**Additional Mitigation Measure 3.6-2a:** All internal combustion engine-driven equipment and vehicles shall be maintained in



accordance with the manufacturers specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.

This measure would reduce project-related NO<sub>x</sub> emissions increases, but not to a less than significant level.

**Level of Significance After Mitigation:** Significant and unavoidable.

### Impact 3.6-3: CO Hot Spot

**PROPOSED ACTION:** *The Proposed Action would not contribute to potential CO hot spots in the vicinity of the Castle Mountain Mine.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional air quality impacts would occur. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan. Air quality impacts associated with mining disturbances would cease upon completion of reclamation activities.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative will not contribute to potential CO hot spots in the vicinity of the Castle Mountain Mine.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

### Impact 3.6-4: Potential Odor Impacts

**PROPOSED ACTION:** *Organic materials and inorganic compounds typically associated with nuisance complaints due to odorous emissions are not associated with the Proposed Action.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional air quality impacts

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

would occur. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan. Air quality impacts associated with mining disturbances would cease upon completion of reclamation activities.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *Organic materials and inorganic compounds typically associated with nuisance complaints due to odorous emissions are not associated with this alternative.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.6-5: Toxic Air Contaminants

**PROPOSED ACTION:** *The Proposed Action would not affect the rate of existing ore processing and related activities that currently emit small quantities of toxic air contaminants.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional air quality impacts would occur. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan. Air quality impacts associated with mining disturbances would cease upon completion of reclamation activities.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would not affect the rate of existing ore processing and related activities that currently emit small quantities of toxic air contaminants.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.



### Impact 3.6-6: Consistency with the AQAP

**PROPOSED ACTION:** *Continued implementation of present emission control measures as part of the Proposed Action will result in consistency with the AQAP.*

The 1991 AQAP outlines emission reduction strategies for stationary source emissions, including a phase-out of petroleum based fuels in favor of alternative fuels. Emission reduction strategies for area-wide and mobile emissions listed in the AQAP include road dust suppression, watering of construction sites, and trip reduction measures. Mitigation measures currently used at the Castle Mountain Mine (soil stabilization, phased revegetation of disturbed areas, dust collectors, use of electric-powered ore processing equipment, etc.) comply with the AQAP-recommended emission reduction strategies. Continued implementation of these measures as part of the proposed project will result in consistency with the AQAP.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional air quality impacts would occur. As currently permitted, the Castle Mountain Mine would continue to

operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan. Air quality impacts associated with mining disturbances would cease upon completion of reclamation activities.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *Air contaminant emission increases associated with haul truck-related diesel engine exhaust for this alternative will not be consistent with the AQAP.*

Based on the net emissions increase analysis summarized in Table 3.6-6, this alternative will result in a significant increase of NO<sub>x</sub> emissions over existing conditions. NO<sub>x</sub> is a precursor to the formation of ozone, a pollutant for which the MDAB exceeds the NAAQS. The quantitative significant emission thresholds are directly associated with standards established in MDAQMD's AQAP. The AQAP has been established for the purpose of achieving compliance with the NAAQS and CAAQS. Therefore, the South Overburden Site Expansion Alternative may have an additive effect on regional and local air quality. This represents a significant air quality impact.

NO<sub>x</sub> emissions impacts for this alternative are directly associated with the increased distance required to haul overburden materials to the South Overburden Site.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

**Mitigation Measures:** In addition to the mitigation measures listed for the Proposed Action, Impact 3.6-1, the following mitigation measure is required:

**Additional Mitigation Measure 3.6-8a:** All internal combustion engine-driven equipment and vehicles shall be kept tuned according to the manufacturer's specifications and properly maintained. Vehicles and equipment shall not be left idling for prolonged periods.

This measure would reduce project-related NO<sub>x</sub> emissions increases, but not to a less than significant level.

**Level of Significance After Mitigation:** Significant and unavoidable.

#### 3.6.3 Cumulative Impacts and Mitigation Measures

Other existing and proposed projects in the area that, together with the Proposed Action, would have potential cumulative effects on the environment, are presently expected to include expansion of existing or development of new mining operations. As with the Proposed Action, these other proposed projects must be found to be consistent with the AQAP. As appropriate, MDAQMD will require these other proposed projects to mitigate significant emissions increases to ensure that they will not contribute to a violation of air quality standards.

Based on the continuation of existing air quality mitigation measures and the anticipated requirement for appropriate air quality mitigation measures for the other proposed projects in the area, it is expected that these projects will not have a significant additive effect on regional air quality but that emissions will be cumulatively significant.

**Mitigation Measures:** No additional mitigation is feasible.

**Level of Significance After Mitigation:** Significant and unavoidable. This impact exceeds the threshold established by Standard of Significance 3.6A.

#### 3.6.4 Residual Adverse Effects

**PROPOSED ACTION:** The Proposed Action would impact air quality by implementing the proposed Mine Plan Amendments. Estimated emission rates would rise for ROG, NO<sub>x</sub>, SO<sub>x</sub>, CO, and PM<sub>10</sub>. The increases in NO<sub>x</sub> and PM<sub>10</sub> would be greater than thresholds established by the MDAQMD and are considered significant. However, as indicated in Section 3.6-2, these emission increases will not have a significant additive effect on regional air quality. The Proposed Action will have no additive effect on regional air quality, although residual adverse effects remain.

**NO ACTION ALTERNATIVE:** Since the No Action Alternative would not result in any changes to current mining operations, there would be no residual adverse effects.

#### **SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:**

The implementation of this alternative would result in additional impacts to air quality compared with the currently permitted operation. Based on the net emissions increase analysis summarized in Table 3.6-6, this alternative would result in a significant increase of NO<sub>x</sub> emission over existing conditions. NO<sub>x</sub> is a precursor to the formation of ozone, a pollutant for which the MDAB exceeds the NAAQS. The NO<sub>x</sub> emissions impacts related for this alternative are directly associated with the increased



distance required to haul overburden materials to the South Overburden Site. Mitigation measures would reduce emissions, but project-related NO<sub>x</sub> emissions increases would remain significant.





**SECTION 3.7**  
**VISUAL RESOURCES**

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## **3.7 VISUAL RESOURCES**

### **3.7.1 Affected Environment**

#### **Introduction**

This section describes the visual character in the vicinity of the Castle Mountain Mine and identifies the impacts on visual resources resulting from the Proposed Action, the South Overburden Site Expansion Alternative, and the No Action Alternative.

#### **Area Characteristics**

The Eastern Mojave is known for its wide range of features. This variety in the desert landscape encompasses mountains and valleys, with vegetation ranging from pinyon-juniper forests to Joshua tree woodland to creosote bush scrub and blackbush scrub. Because of the variable topography and generally sparse vegetation, long-distance views are commonly available. These two elements, variety and the long-distance view, are the most significant characteristics of the East Mojave's visual quality.

Lanfair Valley exhibits characteristics common to the visual quality of the East Mojave region. The large, 340-square mile basin is enclosed by the Piute Range and the Hackberry, Woods, Table, New York, and Castle Mountains. The New York Mountains, which form the western boundary of the valley, are notable as one of the highest ranges in the East Mojave, with elevations over 7,500 feet. The Castle Mountains form the northeastern limit of the valley, reaching a height of approximately 5,400 feet at Hart Peak. Views of Lanfair Valley from higher elevations are expansive.

Past and present human activities have modified Lanfair Valley. Farming conducted early in the century removed vegetation. Homesteads were scattered throughout the extensive private lands on the valley floor. Improved and unimproved dirt roads, and features related to past and present cattle grazing, agriculture, and mining activities are still evident. Corrals, water tanks, and fencing are scattered throughout the valley as part of active grazing use. Mining activities have occurred in the Castle Mountains, Vontrigger Hills, Signal Hill, and the New York Mountains. However, these have been of a much smaller scale and are not readily visible from most popular routes of travel.

#### **Site Characteristics**

The Castle Mountain Mine is located in northern Lanfair Valley at the southern limits of the Castle Mountains. The mine site includes ridges, canyons, and alluvial slopes, with onsite elevations ranging from approximately 4,100 to 5,100 feet. The mountains are of volcanic origin. Exposed soils and rock outcrops vary in color from reddish-brown to nearly white. Blackbush scrub community vegetation cover is sparse over most of the mountain slopes. Vegetation density is greatest in the Joshua tree woodland/creosote bush scrub on the lower slopes and valley floor of the site.

The majority of the mine site is located on BLM administered lands. Existing conditions at the mine site are the result of historic mining activities and a town that had up to 700 residents, as well as the current activities associated with the Castle Mountain Mine. The Castle Mountain Mine has operated for approximately 6 years. A view of the existing mine is shown in Figure 3.1-1. Primary features of the operation include the open pit



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

mine, the heap leach pad and overburden site. Associated facilities include crushing and other equipment, conveyors, the gold recovery building, haul roads, administration building, and mine shop.

#### Site Visibility

Views of the mine site are confined to locations within Lanfair Valley. Views in the valley from the north and east are generally restricted by the intervening topography of the Castle Mountains and its associated foothills and rock outcrops. However, the site is visible from a distance from the south, west, and northwest due to the site's location on the southwestern flank of the Castle Mountains.

Most views of the southern Castle Mountains and the Castle Mountain Mine by visitors to Lanfair Valley are obtained from Ivanpah Road, which enters the valley from the west. Ivanpah Road (Lanfair Road in Lanfair Valley) is a rural, graded-dirt road approximately 40-feet wide. Other views by the general public can be obtained from unimproved dirt roads approaching the site. From the northwest, the site can be viewed from Railroad Grade Road, which traverses this portion of the valley. From the south, the site is seen from unimproved roads such as those used for the East Mojave Heritage Trail.

The mine site can be observed from within the boundaries of the newly established Mojave National Preserve. The Castle Mountain Mine, which pre-dates the Preserve, was specifically recognized and excluded from the Preserve when the U.S. Department of the Interior, National Park Service (NPS) established the Preserve boundaries.

BLM Visual Sensitivity ratings identify the sensitivity of the viewer to the landscape seen.

This is a measure of the number of viewers passing through or using an area and their attitudes about the value of the visual resource in that area.

Because viewer sensitivity is related directly to the number and attitudes of the type of people viewing an area, it is important to identify those viewers which travel through the project vicinity. Because there are no settlements or towns near the mine site, the primary viewing public consists of those pursuing recreation. Much of the recreation use within the Castle Mountain Mine area is concentrated in the Lanfair Valley vicinity. The attitudes of those pursuing recreation toward the quality of the visual environment is usually associated with their specific recreation activity.

#### 3.7.2 Environmental Consequences and Mitigation Measures

This section evaluates the changes that would occur to the scenic quality of Lanfair Valley as a result of the proposed modifications to the Castle Mountain Mine. The BLM manages scenic quality by attempting to limit the degree of change in the characteristic landscape to standards based upon scenic quality and sensitivity of an area.

#### Regulatory Framework

The BLM is responsible for identifying and protecting scenic values on public lands under several provisions of the Federal Land Policy Management Act and NEPA. Because the quality of the visual environment has been increasingly important to the public, the BLM is committed to managing the visual resources as it continues to administer public lands. The BLM Visual Resource Management system



was developed to facilitate the effective discharge of that responsibility in a systematic, interdisciplinary manner.

The Visual Resource Management program has a dual purpose: to manage the quality of the existing landscape and to reduce visual impacts of proposed development activities. In addition, the Visual Resource Management system provides the methodology to inventory existing scenic quality; assign visual resource inventory classes based on a combination of scenic values, visual sensitivity, and viewing distances; and assign visual management objectives. Four visual resource classes have been established to: (1) serve as an inventory tool portraying the relative value of existing visual resources, and (2) serve as a management tool portraying visual management objectives for the respective classified lands. Management objectives for each of the visual resource classes are listed in Table 3.7-1. The Visual Resource Management system also includes a contrast rating procedure for evaluating the potential visual effects of a proposed project or management activity. The Visual Resource Management system provides the basic approach for evaluating the visual impacts of the proposed Mine Plan Amendments as well as the potential cumulative visual impacts of the Castle Mountain Mine.

### Standards of Significance

The Proposed Action would have a significant effect on visual quality if it would:

- 3.7A Substantially affect a scenic area, vista, or public view,
- 3.7B Create visual incompatibility with surrounding land uses,

- 3.7C Introduce a negative visual element (e.g. create light or glare), and
- 3.7D Change the visual character of the site in a manner inconsistent with BLM Visual Management Objectives.

### Impact 3.7-1: Visual Impacts

**PROPOSED ACTION:** *The Proposed Action would result in significant adverse changes to the view of the Castle Mountain Mine site.*

#### Topographic Modifications

An analysis has been completed to determine the degree of aesthetic change that would occur as a result of the proposed Mine Plan Amendments. The analysis was completed for the same viewpoints as were used in the Previous EIS/EIR; the following steps were taken:

- Previous viewpoints were relocated in the field and photographs of the current environment were taken.
- Photographs were scanned into the computer.
- The site plan (topography at completion) was entered into the computer and a Digital Terrain Model (DTM) generated. The DTM allows a three-dimensional view to be created, and amended from the elevation and direction of the viewpoint photographs.
- The DTM is imported into computer programs for photograph enhancement. Scanned photographs of rock surfaces and surfaces reclaimed with growth media and vegetation were used to compose the final image.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

<p align="center"><b>TABLE 3.7-1</b> <b>VISUAL RESOURCE MANAGEMENT CLASS OBJECTIVES</b></p>	
<b>CLASS I OBJECTIVE</b>	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
<b>CLASS II OBJECTIVE</b>	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic (design) elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
<b>CLASS III OBJECTIVE</b>	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
<b>CLASS IV OBJECTIVE</b>	The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.
<b>REHABILITATION AREAS</b>	Areas in need of rehabilitation from a visual standpoint should be flagged during the inventory process. The level of rehabilitation will be determined through the resource management planning process by assigning the Visual Resource Management class approved for that particular area.

Source: BLM 1986

The location of the simulation viewpoints is shown in Figure 3.7-1. The completed simulations for the Proposed Action are shown in Figures 3.7-2 through 3.7-4. The figures show the current view of the Castle Mountain Mine, simulation of the Castle Mountain Mine at completion of the Proposed Action, and simulation of the Castle Mountain Mine after reclamation.

The Proposed Action would expand the scope of visual contrast between existing and previously approved mine-related facilities

and the natural landscape character principally as a result of topographic changes due to:

- Expansion of mine pits; primarily at the Oro Belle-Hart Tunnel Pit
- Creation of the North Overburden Site, as an extension of the North Clay Pit Reclamation Area
- Lateral and vertical expansion of the heap leach pad

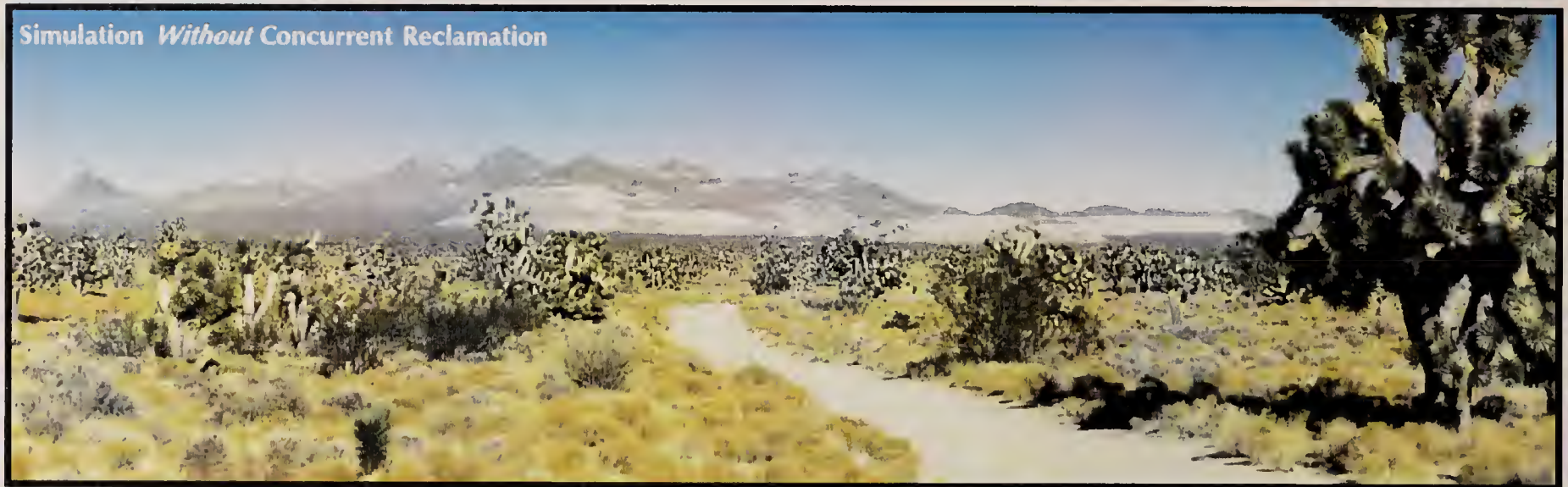


## Location of Simulation Viewpoints

CASTLE MOUNTAIN MINE  
San Bernardino County, California

### Figure 3.7-1





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## West Viewpoint Photograph and Proposed Action Simulation

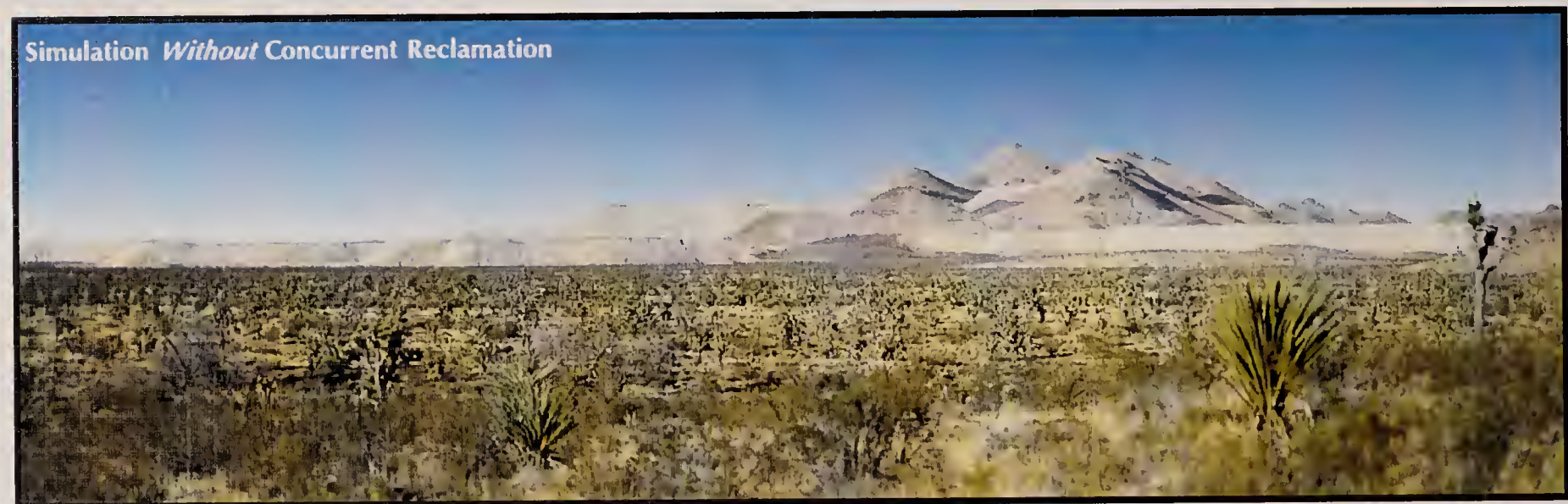




These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## North Viewpoint Photograph and Proposed Action Simulation





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## South Viewpoint Photograph and Proposed Action Simulation



From viewpoints in Lanfair Valley, expansion of the North Clay Pit Reclamation Area to create the North Overburden Site (205 acres at an approximate height of 360 feet), would be the most visible topographic change. The North Overburden Site would extend approximately 5,000 feet along the base of the Castle Mountains. This feature would be visible from the north and west.

Consolidation of the permitted locations of the heap leach pads (currently at a height of 120 feet) into a single large pad (420 acres at an approximate height of 150 feet) would be an increase in the scale of the feature and in its relative dominance within the landscape. This would be most evident from the north and south viewpoints established for the simulations (refer to Figures 3.7-2 and 3.7-3). The past 6 years of operation have resulted in similar types of visual changes in the landscape, which would be increased incrementally by the Proposed Action.

Expansion of the Oro Belle-Hart Tunnel Pit would generally not be visible from Lanfair Valley.

The Proposed Action would change the aesthetics of the mine as viewed from locations onsite as a result of backfilling of the Lesley Ann Pit. The Oro Belle-Hart Tunnel Pit and South Extension Pit would be created.

The topography of the site and surrounding area would attenuate the visibility of some project features; however, the majority of the project features would be in full view of the existing viewpoints used for visual simulations. Distance would also attenuate the degree of visual impact to some extent; however, the large-scale landform changes proposed would be very evident. The most

sensitive viewpoints are over 3 miles in distance from the site, as are the primary roadways in Lanfair Valley. However, the site itself is slightly over 2 miles across and has an elevation change of approximately 700 feet from low to high point of the mine site. This scale results in a dominant feature and impact even when viewed from a distance greater than 3 miles, as shown in Figures 3.7-2 through 3.7-4.

### *Vegetation Changes / Pit High Wall Staining*

The Proposed Action would result in an additional 490 acres of surface disturbances on the site, primarily for the additional mine pit, overburden and heap leach areas. Vegetation, mostly in the blackbush scrub community, would be incrementally removed as the facilities develop over the life of the operation. Removal of vegetation changes the visual color and texture of land surfaces.

The lighter earth colors of disturbed areas would initially be noticeable, as would the form and scale of the North Overburden Site and heap leach pile.

Additional pit highwalls created by the Proposed Action may also create visible color contrasts. The Previous EIS/EIR stipulated that rock staining be required (BLM Stipulation No. 75 and County Condition No. 93) to reduce the color contrast between the high pit walls and the undisturbed slopes. Applications of the rock stain were tested at several locations, including rock cuts along drill roads, the top of Big Chief Hill (eastern highwall of the South Clay Pit) and selected areas within the Lesley Ann Mine Pit. These tests affirmed the effectiveness of rock staining where necessary to attenuate color contrasts. However, the pit high wall is darker



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

in color than anticipated, and the contrasts that were originally anticipated have not occurred. Consequently, no large scale staining of the pit high walls has been completed.

Originally, Viceroy proposed in its amendment application to eliminate the pit high wall staining requirement. However, the potential color contrasts of additional high wall areas that would be developed as part of the Proposed Action are not certain. Therefore, Viceroy proposes to modify the highwall staining for use on an as needed basis. Rock staining would be done on the additional pit high walls as needed to attenuate potential color contrasts. This would be done in conjunction with other reclamation activities, including revegetation. The revised mitigation measure is found here as Additional Mitigation Measure 3.7-1a.

Reclamation of disturbed surfaces, including distribution of growth media and seeding and planting of vegetation, would occur during the operational period as the surfaces are completed and discontinued from use. However, native vegetation cover is relatively low (approximately 15 percent) so the primary color change is related to the mined rock, and the degree that the contrast of light-colored surfaces can be reduced with growth media, and with revegetation.

The primary visible surface associated with the Proposed Action would be the west face of the North Overburden Site. A slope up to 240 feet high would extend along this face, similar to the existing slopes of the North and South Clay Pit Reclamation Area slopes, and the slopes of the South Overburden Site. These changes would therefore be viewed as part of the established vegetation and visual

changes associated with the Castle Mountain Mine.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures are being implemented on an ongoing basis as mining and reclamation progress. Continued implementation of the following measures for approved mining and for the proposed Mine Plan Amendments would address potential visual impacts and reduce this impact to the degree feasible, but not to a less than significant level.

#### COUNTY CONDITIONS OF APPROVAL

88. To minimize the degree to which they are seen from sensitive viewpoints: a) the overburden pile shall be located on an outwash slope bounded by small hills; and b) heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor.

The South Overburden Site and heap leach pile have been constructed in a manner consistent with this requirement.

90. Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period.

Dust control is implemented as part of ongoing operations.

92. Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight-line geometrics and potential contrast in form.
94. Revegetation shall include some areas within the project boundary and along access roads that were disturbed by the actions of the third parties before reclamation of such disturbances were required under the Federal Land Policy Management Act



(FLPMA) and the California Surface Mining and Reclamation Act (SMARA). Clay pits shall be reclaimed using overburden, with rock staining of the upper pit wall of the clay pit on Big Chief Hill. The Applicant shall incorporate reclamation of the adjacent North Clay Pit, located offsite, into the Mine/Reclamation Plan.

Reclamation using overburden on the South Clay Pit and Big Chief Hill is largely completed. Overburden has also been placed on the North Clay Pit area, although topographic shaping and revegetation are not yet scheduled.

95. The Applicant shall comply with all of the reclamation requirements set forth in the Mine/Reclamation Plan, including, but not limited to, instituting the required vegetation program. Revegetation shall use common plants to the area.

Concurrent reclamation, where appropriate at this point in mine operations, has been completed in accordance with the Mine/Reclamation Plan.

#### BLM STIPULATIONS

71. To minimize the degree to which they are seen from sensitive viewpoints: a) the overburden pile shall be located on an outwash slope bounded by small hills; and b) heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor.

The South Overburden Site and heap leach pile have been constructed in a manner consistent with this requirement.

73. Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period.

Dust control is implemented as part of ongoing operations.

75. Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce

the impact of straight line geometrics and potential contrast in form and line.

A test site for heap leach pile reshaping is shown in Figure 2.0-32.

77. Revegetation shall include some area within the project boundary and along access roads that were disturbed by the actions of third parties before reclamation of such disturbances was required under the Federal Land Policy management Act (FLPMA) and the California Surface Mining and Reclamation Act (SMARA). Clay pits shall be reclaimed using overburden, with rock staining of the upper pit wall of the clay pit on Big Chief Hill. The Operator shall incorporate reclamation of the adjacent North Clay Pit, located off-site, into the Reclamation Plan.

Reclamation using overburden on the South Clay Pit and Big Chief Hill is largely completed. Overburden has also been placed on the North Clay Pit area, although topographic shaping and revegetation are not yet scheduled.

78. The Operator shall comply with all the reclamation requirements set forth in the Reclamation Plan including, but not limited to, instituting the required revegetation program. Revegetation shall use native plants common to the area.

Concurrent reclamation, where appropriate at this point in mine operations, has been completed in accordance with the Mine/Reclamation Plan.

88. The Operator shall provide a viewpoint at the Castle Mountain Project Site, describing past and present gold mining operations in the area. The interpretive site will be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. the site shall include descriptive information about the permitting process, agencies involved in that process, measures taken to protect the environment, current mining operations, and the history of the Hart Mining District. This descriptive information shall be approved by the BLM. [DEIS p. 6.10-2.]

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This viewpoint and interpretive site has not been constructed to date.

***Additional Mitigation Measure 3.7-1a:***

County Mitigation Measure #93 (BLM Stipulation #76) has not been needed for the Lesley Ann Pit and has not been implemented to date. The underlined changes are proposed to provide for continued use on an as-needed basis to future mine pit walls.

76. Rock staining solutions shall be used on the upper mine pit walls where necessary to reduce the contrast of light-colored rock exposed by mining activities. This requirement shall exclude backfilled areas and the Lesley Ann Pit highwall. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes.

***Level of Significance After Mitigation:*** Significant and unavoidable. This impact exceeds the threshold established by Standard of Significance 3.7A.

***NO ACTION ALTERNATIVE:*** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional visual resource impacts would occur, and there would be no additional visual resource impacts due to surface disturbances and vegetation removal beyond the completion of the approved mine plan.

As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the

Reclamation Plan. The completed simulations for the No Action Alternative are shown in Figures 3.7-5 through 3.7-7.

***Mitigation Measures:*** No additional mitigation would be necessary.

***Level of Significance After Mitigation:*** Less than significant.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** *This alternative would result in significant adverse changes to the view of the Castle Mountain Mine site.*

Topographic changes associated with the South Overburden Site Expansion Alternative would be similar in magnitude, but different in location, than those associated with the Proposed Action.

Visual simulations for the South Overburden Site Expansion Alternative are shown in Figures 3.7-8 through 3.7-10. For the South Overburden Site Expansion Alternative, rock would be placed primarily in the existing South Overburden Site, with a significantly smaller amount in the North Overburden Site. This would result in some lateral, but mainly vertical, expansion of the South Overburden Site, as compared to its permitted configuration. The overburden would be placed in a crescent-shaped configuration surrounding low-grade ore stockpiles and surfaces already reclaimed. The South Overburden Site would increase in height from 180 feet by 240 feet to 420 feet.





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## **West Viewpoint Photograph and Proposed No Action Simulation**





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

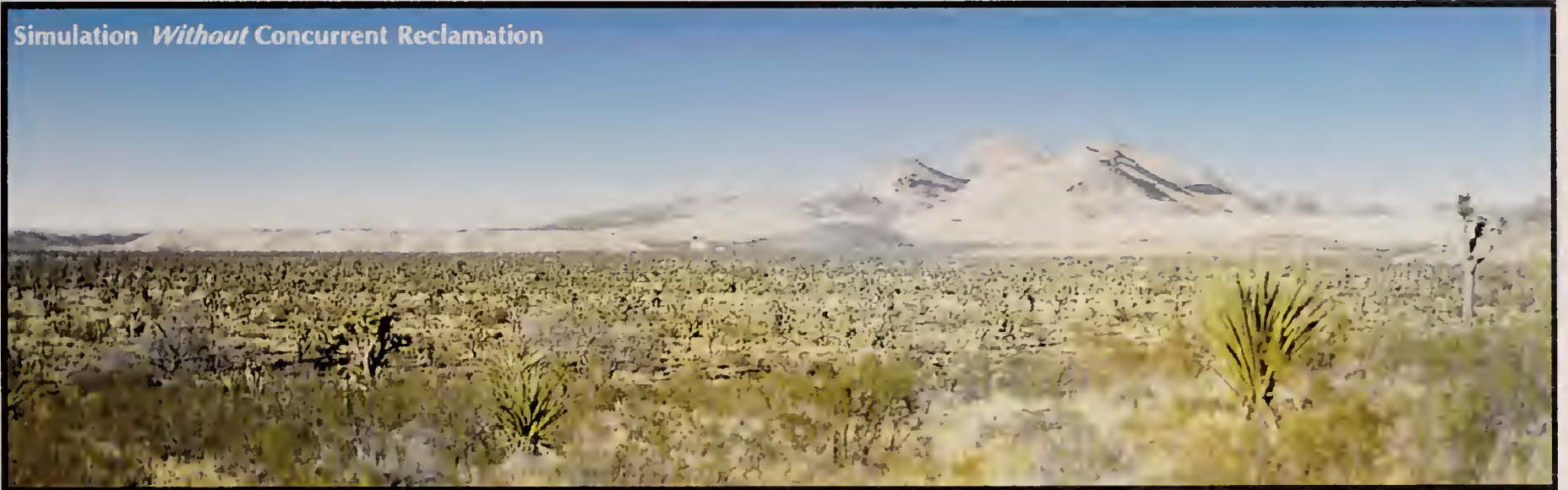
## North Viewpoint Photograph and Proposed No Action Simulation



Existing Conditions



Simulation *Without* Concurrent Reclamation



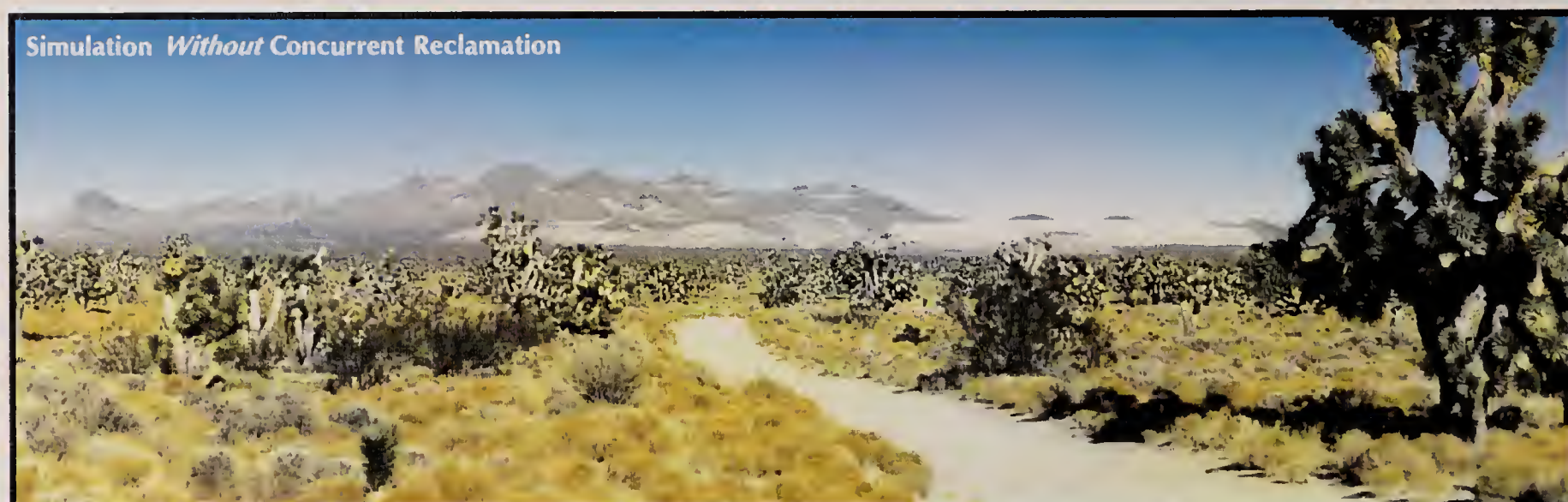
Simulation *With* Reclamation



These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## South Viewpoint Photograph and No Action Simulation





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## West Viewpoint Photograph and South Overburden Site Expansion Alternative Simulation





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## North Viewpoint Photograph and South Overburden Site Expansion Alternative Simulation





These simulations depict existing conditions and potential future conditions with additional mining. Color contrasts are shown based on experience with pit walls , overburden and ore at the Heap Leach Pads. Reclamation colors assume a reduction in color contrast by selected placement of dark colored rock, as available, placement of growth media, and revegetation. Vegetation is depicted in the early stages of planting and growth. Re-establishment of pre-disturbance vegetation cover and species composition would be a lengthy process; it could take decades for vegetation to re-establish to pre-mining conditions.

## South Viewpoint Photograph and South Overburden Site Expansion Alternative Simulation



Changes would not generally be visible from viewpoints in northern Lanfair Valley, with the exception of the increased height of the heap leach pad. However, from westerly and southerly viewpoints, the increased height of the South Overburden Site would be distinct, primarily due to its height and location. The site presently being filled sits between some small hills at the southern limits of the Castle Mountains, but is below the elevation of the hills. With the South Overburden Site Expansion Alternative, the overburden height would be increased, from a current height of 180 feet, to 420 feet. This would raise it to an elevation above the surrounding hills. Because this would be the highest constructed feature on the site, it would result in an aesthetic feature distinct from the adjacent Castle Mountains. To reduce the effect of this overburden height, the material would be moved at project conclusion and distributed over the South Overburden Site following processing of the low-grade ore stockpiles. This would lower the overburden elevation by about 120 feet, which would still be 300 feet higher than the South Overburden site under existing conditions, the Proposed Action, and the No Action Alternative.

This is considered to be a significant visual impact.

This alternative would avoid surface disturbances and vegetation removal on 205 acres (the North Overburden Site area) as compared to the Proposed Action. However, placement of the overburden rock at the South Overburden Site would create additional slopes and surfaces adding to the visual contrast at that location. Other visual impacts of vegetation removal for this alternative would be identical to that of the Proposed Action. On the balance, impacts of this

alternative related to vegetation removal would be similar in significance to those of the Proposed Action.

Overburden placed at the South Overburden Site would be placed as needed to avoid interference with operations and low-grade ore stockpiles. This may result in a crescent-shaped area that would increase the height of the South Overburden Site elevation by as much as 240 feet.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures are being implemented on an ongoing basis as mining and reclamation progress. Continued implementation of the following measures and additional mitigation measure for approved mining and for this alternative would address potential visual impacts and reduce this impact to the degree feasible, but not to a less than significant level.

**Additional Mitigation Measure 3.7-1b:** At the conclusion of mining, when low-grade ore has been processed and removed from its storage areas on the south Overburden Site, the overburden shall be redistributed to lower its elevation and related visual effects.

The above activity may result in lowering of the South Overburden Site elevation by approximately 120 feet, to an elevation of approximately 4,630 feet MSL.

**Level of Significance After Mitigation:** Significant and unavoidable. This impact exceeds the threshold established by Standard of Significance 3.7A.

**Impact 3.7-2: Environmental  
Impact of Additional Mitigation  
Measure 3.7-1b**

***SOUTH OVERBURDEN SITE  
EXPANSION ALTERNATIVE:*** *Mitigation Measure 3.7-1a could result in additional environmental impacts beyond those of the alternative itself.*

The CEQA guidelines (§15126(c)) require that:

“If a mitigation measure would cause one or more significant effects in addition to those that would be caused by the project as proposed, the effects of the mitigation measure shall be discussed but in less detail than the significant effects of the project as proposed.”

Loading and moving overburden at the conclusion of mining would be an additional activity that would extend the active life of the Castle Mountain Mine by approximately 1 to 1.5 years. This calculation is based on rehandling of approximately 17 million tons of overburden.

Environmental impacts associated with this activity would primarily be related to water use for dust control (up to 80 gpm) and would be less than occurs under full mine operating conditions, and would therefore not be expected to be significant. Continued generation of air emissions (PM<sub>10</sub>) would be a cumulatively significant effect.

***Mitigation Measures:*** No additional mitigation would be necessary.

***Level of Significance After Mitigation:***  
Less than significant.

**Impact 3.7-3: Structures,  
Equipment, and Operations**

***PROPOSED ACTION:*** *The proposed action would result in additional impacts through the extension of operation of the Castle Mountain Mine by approximately 10 years.*

Existing structures and facilities in use at the Castle Mountain Mine would continue to be used for the Proposed Action. Mine and other mobile equipment would continue to be used. No changes to operating methods are proposed. No changes to the visual environment would therefore occur due to these elements.

The Proposed Action would extend the life of the Castle Mountain Mine by approximately 10 years. Structures, equipment, and operating activities would therefore continue to be visible from certain locations for an extended period of time.

***Mitigation Measures:*** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. Some of these measures, such as painting structures to blend in with the surroundings, have been completed. Other measures will be completed during reclamation. The following measures would adequately address potential visual impacts of structures, equipment, and operations for the Mine Plan Amendments.

**COUNTY CONDITIONS OF APPROVAL**

89. Operational structures and the solution storage tanks shall be painted to blend with the



predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County.

Structures have been painted as required.

91. Upon project completion, the Applicant shall remove all operating facilities, including structures, equipment, transmission lines, and fencing, in conformance with the Mine/Reclamation Plan requirements.

#### BLM STIPULATIONS

72. Operational structures and the solution storage tanks shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County.

Structures have been painted as required.

74. Upon project completion, the Applicant shall remove all operating facilities, including structures, equipment, transmission lines, and fencing, in conformance with the Reclamation Plan requirements.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The No Action Alternative would not change the continued operation of the permitted activities; no additional visual resource impacts would occur. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Upon completion, the site would be reclaimed in accordance with the Reclamation Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would result in continued use of existing structures and equipment as would occur for the Proposed Action. No changes to operating methods would occur. The existing visual environment for these features would not, therefore, be affected.*

The South Overburden Site Expansion Alternative would extend the life of the Castle Mountain Mine by approximately 10 years. Structures, equipment and operating activities would therefore continue to be visible from certain locations for an extended period of time.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.7-4: Lighting and Glare

**PROPOSED ACTION:** *The Proposed Action would not create any new sources of lighting or glare.*

The Proposed Action would utilize the existing structures and facilities, including mobile equipment. No changes to operating methods are proposed. Therefore, the

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Proposed Action would not create any new sources of light or glare on the mine site. However, it would extend the lighting for the additional length of time of mine operation.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

Sources of light and glare were analyzed in the Previous EIS/EIR. No additional impacts would occur.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance after Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *Impacts of this alternative would not create any new sources of lighting or glare.*

The South Overburden Site Expansion Alternative would utilize the existing structures and facilities, including mobile equipment. No changes to operating methods are proposed. Therefore, this alternative would not create any new sources of light or glare on the mine site. However, it would extend the lighting for the additional length of time of mine operation.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

#### **Impact 3.7-5: East Mojave Heritage Trail Overlook**

**PROPOSED ACTION:** *An existing exploration road may remain available for use as a side excursion from the East Mojave Heritage Trail. If the creation of the overlook is determined to be feasible, reclamation and visual resource attenuation as completed on other drill roads would not be done.*

An existing exploration drilling road extends for less than 1 mile on the east slope of the Castle Mountains. Under the Proposed Action this road may become part of the East Mojave Heritage Trail. A potential overlook to the mine could be provided at the upper end of the road above the Oro Belle-Hart Tunnel Pit. The feasibility of creating this overlook will be determined by the Applicant, in ongoing consultation with the BLM. Views of the Castle Mountain Mine are generally not available from the east due to intervening topography.

Existing aesthetics of the exploration drill road are shown in Figure 3.7-11. Reclamation of the road, if it were to be completed in accordance with existing requirements, would not significantly change its aesthetics when viewed from the base of the mountains. No significant negative aesthetic changes would therefore occur as a result of leaving this access road open, and not reclaiming it.



Photograph: Lilburn Corporation  
Date: 11/96



Existing exploration drill road on east slope of Castle Mountains. This road is being considered as a future East Overlook Site. View west.

Photograph: Lilburn Corporation  
Date: 11/96



View of mine area from approximate future viewpoint area. View southwest.

## Potential East Overlook Location Photographs



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

As the Proposed Action would result in sequential backfilling of the Lesley Ann Pit, mine viewpoints from the west would no longer be as interesting. The subject exploration road would provide access to a panoramic view of the completed mine, adding to the visual experience for recreational users of the East Mojave Heritage Trail.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

The East Mojave Heritage Trail Overlook would not be created under this alternative. The overlook and the existing exploration drilling road on the east slope of the Castle Mountains would be reclaimed in accordance with the approved Reclamation Plan, including revegetation.

Mine reclamation and revegetation procedures, as specified in the Mine and Reclamation Plan and mitigation measures already established for the operation and the Proposed Action, would adequately address the impacts of this alternative.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance after Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *Impacts of this alternative would not differ from the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### 3.7.3 Cumulative Impacts and Mitigation Measures

Current mining operations have modified the topography of the mine site. The Proposed Action would expand the scope of visual contrast between existing and previously approved mine-related facilities and the natural landscape character. This would occur as a result of modifying the site topography and increasing the surface disturbance by 490 acres, shown in Figures 3.7-1 through 3.7-3. These visual impacts would be confined to locations within the Lanfair Valley. The visual impacts associated with the Proposed Action are significant. Consequently, when combined with current and future (permitted) activities of the Castle Mountain Mine, the result is considered a significant cumulative visual impact.

Regionally, other past, present, and reasonably foreseeable future projects affect the visual character of the region. However, these projects are a considerable distance from the Castle Mountain Mine. In addition, mining projects would be required to comply with SMARA.



Site reclamation would attenuate visual impacts through revegetation and site restoration. As specified in mitigation measures already implemented, and the Reclamation Plan, reclamation will include the removal of mine related facilities and the recontouring of overburden storage sites and heap leach pads. In addition, the color contrasts associated with the pit high walls when compared with the surrounding topography are much less than previously anticipated. The ongoing site restoration and revegetation, along with implementation of the Reclamation Plan, would reduce potential cumulative visual impacts but not to a less than significant level.

**Mitigation Measures:** No additional mitigation are feasible.

**Level of Significance after Mitigation:** Significant and unavoidable. This impact exceeds the threshold established by Standard of Significance 3.7A.

### 3.7.4 Residual Adverse Effects

**PROPOSED ACTION:** The Proposed Action would result in additional visual impacts related to vegetation disturbance and landform modification. The impacts resulting from the removal of additional vegetative cover, along with landform modifications, including the creation of an additional open pit and the North Overburden Site would result in a permanent change to the landscape. Rock staining will continue to be required if substantial contrasts exist in the quarry high walls. As a consequence, wall color contrasts in the quarry walls will not cause adverse effects.

**NO ACTION ALTERNATIVE:** Since the No Action Alternative would not result in any changes to current mining operations, there would be no residual adverse effects.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** The implementation of the South Overburden Site Expansion Alternative would result in changes to the currently planned and permitted South Overburden Site.





**SECTION 3.8**  
**CULTURAL RESOURCES**

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## **3.8 CULTURAL RESOURCES**

### **3.8.1 Affected Environment**

#### **Introduction**

Cultural resources are places or objects that are important for scientific, historic, and/or religious reasons to cultures, communities, groups, or individuals. Cultural resources include historic and prehistoric archaeological remains, structures, and artifacts that provide evidence of past human activity and places of importance in the traditions of societies or religions. Section 101 of the National Historical Preservation Act (NHPA) establishes procedures for determination of eligibility for listing historic and archaeological sites on the National Register of Historic Places (NRHP).

Prehistoric sites within the area of potential effect may contain artifacts, food remains, and features that could provide information on the kinds of prehistoric activities conducted at the sites, the numbers of people, and the dates of occupation. This kind of information is important for an understanding of past lifeways, specifically the nature of aboriginal cultural adaptations in the arid eastern Mojave Desert.

Historic sites may contain information that can aid in understanding the overall structure of industrial activities and the manner of individual enterprise in the Hart Mining District.

The following paragraphs describe the cultural baseline information as it is currently understood for the proposed mine plan amendments. The cultural resources information presented is a summary of data collected from previously prepared

archaeological documents and surface inventories, augmented by a 1988 Class III surface inventory of an area encompassing the property site and the mine access road for the previous project EIR/EIS.

#### **Prehistory and Archaeology**

The earliest dated period of human occupation in the eastern Mojave Desert is presently established at 10,270 years before present (BP). This period is characterized by the Lake Mojave Complex, when the Soda and Silver playas were inundated by Pleistocene Lake Mojave following the last period of glaciation. The subsistence economy of the inhabitants at this time is thought to have been based on generalized hunting (BLM, 1988).

With the transition to a more arid and warmer climate following the Pleistocene, subsistence practices changed, and new cultures developed. The Pinto Complex (7,000 to 4,000 BP) saw the development of a more migratory society exploiting a number of environments, with a greater reliance and more diverse plant resources. The Gypsum Period (4,000 to 1,500 BP) marked the beginning of seed milling technology, selective gathering, and surplus stockpiling. Ceramics and turquoise mining were introduced into the area in the following Saratoga Springs Period (1,500 to 700 BP) (BLM, 1988).

The final period of human occupation in the eastern Mojave prior to Euro-American expansion was the Shoshonean Period (BLM, 1988). Southern Piute groups had migrated southward, replacing the longstanding Mojave groups. The Chemehuevi, an offshoot of the Southern Piute, occupied the Castle Mountain Mine site in historic times (Wilke and Schroth, 1988). These groups were wide-



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

ranging foragers, and many eventually settled on the Colorado River and adopted farming.

## Historic Period

### *Regional History*

Prior to the mid 19th century, Lanfair Valley served as a transportation route between the coastal areas of California and communities in the interior of the Desert Southwest. In the 1850s, the Mojave Road was built by the U.S. Army along the alignment of an ancient Indian trail. Small redoubts, or forts, were established by the Army along the trail near spring-fed water sources such as Piute Spring (Casebier, 1987). Regular mail and stage service were established in 1858, and the road remained in service until the 1880s when it was supplanted by the railroads.

Active settlement of the region began in the second half of the 19th century and early part of the 20th century, with the advent of mining and farming activities. Various small mining operations and towns were established in the New York Mountains (e.g. Vanderbilt) and Castle Mountains (Hart), in Searchlight, Nevada and other locations within the region. The railroad was later extended into the Ivanpah Valley as the California Eastern Railroad. A branch of this railroad, the Barnwell and Searchlight Railroad, was built between these two communities to serve mining operations in Searchlight. In the early 1920s, these lines were abandoned in response to the decline in mining and farming in the region and storm damage to rail facilities.

Cattle ranching was introduced into Lanfair Valley in the late 19th century, followed by dry farming in the first two decades of the 20th century. With the advent of homesteading and settlement of the valley, small

farm towns, including Lanfair, Dunbar, and Maruba were established at points along the alignment of the Nevada Southern Railroad (now Lanfair Road). Dry farming proved to be a short-lived activity, and by 1930 most homesteads, and the towns associated with them, were abandoned. The comparatively large amount of privately owned land in Lanfair Valley is a reflection of past farming activities.

### *Site History*

The town of Hart, abutting the current mining operations, was one of several towns established around Lanfair Valley during the peak mining period. The town was founded in 1908 by James Hart and his mining partners after discovery of gold in the Castle Mountains. Mining began at the Oro Belle Mine and later expanded to include the Big Chief and Hart Consolidated mines.

During this period, Hart grew rapidly, numbering somewhere between 400 and 700 residents within months of its founding. Two months after the town was founded, telephone and telegraph services were operational with lines, probably strung on Joshua trees, connecting to Western Union facilities at Barnwell, a railroad line station, and a mining camp some 10 miles west of Hart. One early visitor to Hart described it as a main street lined with tents for a distance of a half mile, with developed side streets, a few frame buildings, and 24 businesses. In 1907 a branch of the Atchison, Topeka & Santa Fe (AT&SF) Railway known as the Barnwell & Searchlight Railway was completed. The growing community at Hart demanded considerable amounts of lumber for new construction, most of which was imported by rail, wood being scarce in the mountains near town. The proximity at Barnwell of



convenient rail transportation was also important in the shipping of ore to Seachlight, approximately 20 miles northeast of Hart, for milling.

Later that year (1908) a siding on the Barnwell & Searchlight Railway was built 3.5 miles northwest of Hart and named for the Hitt brothers. This development allowed more reliable mail service and supply connections. Previously, mail had been brought in by stagecoach, but now the station agent, R. J. Young, used his car to shuttle mail between town and Hitt Siding. The subroadbed of the Barnwell & Searchlight Railway remains visible near Hart, although the tracks have been removed.

An ore stamp mill was brought in from Nevada and constructed at the Big Chief Mine. The heyday of Hart saw three major mines in operation, the Oro Belle, Big Chief, and Hart Consolidated. Underground workings at the Oro Belle included a 60 foot tunnel, a 1,000 foot tunnel, and a 200 foot shaft, as well as other extensive facilities. Oro Belle veins assayed as high as \$200 a ton. The shaft at the Big Chief was hundreds of feet deep, with a tramway leading from the portal to the 10-stamp mill.

Gold ores that could be economically mined were quickly exhausted. The 1910 census listed only 40 residents of the town. During that same year, a fire destroyed half the town, most of which was not rebuilt and by 1920, Hart was described as a "ghost town."

Discovery in the 1920s of kaolin clay deposits in the area led to creation of two open-pit clay mines. Kaolin is a fine-grain white clay valued for its use in porcelain manufacture. One mine was located on the eastern edge of

the abandoned townsite, the second just under a mile to the south. H. F. Coors of Inglewood, California, operated the northern mine, Standard Sanitary Company the southern pit. Kaolin production continued into the 1980s.

In the 1930s gold mining revived at the site of the Big Chief Mill under a new operation known as the Valley View. Between 1933 and 1935, and again in 1942, the enterprise was expanded to a fairly large-scale development. Miners and millmen lived in barracks or bunkhouses at the location and shared meals in a company mess. The Hart townsite was not reoccupied. Activity at the mill was curtailed by Limitation Order L-208 during World War II. This regulation classified gold mines as non-essential to the war effort, thereby freeing miners for military service or to work in mines producing critical materials needed by the nation. The mill was at the time processing scheelite (calcium tungstate). It was dismantled later in 1951 for salvage.

### *Native Americans*

Native American sociocultural values are reflected in their religious practices, which form an integral part of their culture and are intimately associated with and dependent upon the natural environment. A basic philosophy of tribal religion is to remain in a harmonious relationship with nature as participants in the ongoing process of creation. Native American religions embody a belief system in which interaction with the environment is holistic. They express reverence toward the total environment and consider specific places to be sacred.

Native American sociocultural values also are reflected in the importance attributed to plants and animals, objects, places, lifestyles, and

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

beliefs and frequently are associated with the gathering and use of natural substances. These sociocultural values tend to be associated with three categories of locations identified by the BLM:

- **Traditional Use Areas:** Currently or historically utilized for secular and subsistence activities, including the collection of foodstuffs, craft, medical, domestic materials, and hunting.
- **Ritually Associated Localities:** Include seasonal and non-locatable sites in areas related to ritual performance such as procreative and purification rites, and sources of ritual materials.
- **Sacred Areas:** Include areas of particular religious significance, such as burials, ceremonial sites, and areas employed for healing purposes.

None of these types of areas are known to exist within sites to be occupied as a result of implementing the Proposed Action.

#### **Cultural Resource Inventory**

A series of cultural resource inventories has been conducted at the site for the previous project EIR/EIS. These include inventories for access roads, general reconnaissance of the area, and specific inventories of:

- Primary open pit mine and heap leach recovery areas,
- Southeast of the open pit mine and overburden areas,
- North of the open pit mine area,

- Water well sites northwest of the mine site,
- Mine access road,
- Monitoring well drill sites west of Piute Spring, approximately 13 miles south of the mine site, and
- Milma Patent located on 150 acres in the northern portion of the mine site, including the North Clay Pit Reclamation Area.

#### **Mine Access Road**

##### *Prehistoric Period*

A number of sites associated with prehistoric activities in the region were inventoried along the mine access road between the current mining operations locations and the town of Searchlight, Nevada. Aboriginal sites that could be affected by this access route include one multiple activity camp used for seed collecting and processing of food storage, as well as a quarry, where inhabitants reduced stone for tools from obsidian and chert/chalcedony sources.

##### *Historic Period*

The historic sites along the access route alignment are associated with the former railroad and one site where material related to either construction or use of the railroad was discarded.

#### **Mine Operations Area**

##### *Prehistoric Period*

Cultural resources inventories in the Hart Mining District demonstrated that the aboriginal inhabitants of the area actively mined the site for resources to make tools and



other artifacts. White chalcedony, chert, rhyolite, and jasper materials were exploited. These aboriginal sites contain significant information of research value into understanding aboriginal tool stone quarrying and reduction activities.

### ***Historic Period***

Historic sites in the vicinity are related to the former town of Hart and associated gold mines and mill facilities. The mines and mill site have been studied and documented in detail through field mapping, photographic documentation, and archival research. Other sites include trash deposits outside the townsite and the Hart water supply well.

The town of Hart contains a number of individual loci of potential historic significance, including several trash disposal loci and structural loci or foundations (including a storage bunker, the cemetery, and the main town access road). Although many of these have been disturbed by clay mining activities and artifact hunters, the overall site contains substantial information of research value for understanding the history of small "boom and bust" mining communities in the eastern Mojave Desert.

## **West Well Field**

### ***Prehistoric Period***

No archaeological sites were identified within the West Well Field northwest of the operations area.

### ***Historic Period***

No historic sites were identified within the West Well Field northwest of the operations area.

## **Regulatory Review**

### ***National Historic Preservation Act (§106)***

Among other mandates, the National Historic Preservation Act of 1966 (NHPA) as amended established the National Register of Historic Places (NRHP) to be maintained by the Secretary of Interior (Secretary), the position of State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP). Section 106 of the Act requires federal agencies having direct or indirect jurisdiction over, or licensing authority for, an undertaking in any State to provide the SHPO of that state and the ACHP an opportunity to comment on an undertaking affecting historic (cf. cultural) resources listed or eligible for inclusion in the NRHP. Section 304 directs federal agencies, in consultation with the Secretary and the ACHP, to: (1) withhold from disclosure to the public information about the location, character, or ownership of a historic resource if disclosure may cause a significant invasion of privacy, risk harm to the resource, or impede use of a traditional religious site by practitioners; and (2) determine who may have access to such information for the purpose of carrying out requirements of the NHPA.

The criteria for NRHP eligibility specify as follows:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that:

- (a) are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) are associated with the lives of persons significant in our past; or

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- (c) embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) have yielded, or may be likely to yield, information important in prehistory or history.

The ACHP regulations, "Protection of Historic Properties" (36 CFR 800: Federal Register, September 2, 1986 [51 FR 31115]), outline procedures to be followed by federal agencies with respect to historic resources. Consultation with the SHPO is required to determine if a proposed undertaking encompasses any property listed or eligible for inclusion in the NRHP. The federal agency must determine if the proposed undertaking would have an effect on each property so identified. If there could be an effect, the Criteria of Adverse Effect are applied and treatment measures developed for resources that would be affected adversely. The regulations provide for consultation with the SHPO and ACHP to establish conditions for a Memorandum of Agreement to mitigate potential adverse effects.

Within statutory constraints (NHPA §304, Archaeological Resources Protection Act of 1979 [Section 9]), ACHP regulations encourage the participation of local governments, Native American tribes, and the public in the management process (36 CFR 800.1 [c] [2]). In this context, comments on the proposed Castle Mountain Mine expansion are sought from the County of San Bernardino, Native American Heritage Commission, local Native Americans, archaeologists, historians, and other groups or individuals concerned with cultural resources.

#### *American Indian Religious Freedom Act*

The American Indian Religious Freedom Act of 1978 resolves that it shall be the policy of the United States to protect and preserve for the American Indians their inherent right of freedom to believe, express, and exercise their traditional religions.

#### *California Register of Historical Resources (CRHR)*

Criteria for listing resources in the CRHR are based on those developed by the National Park Service for the NRHP. The federal criteria have been modified in order to include a broader range of resources which better reflect the history of California. A property must be significant at the local, state, or national level, under one or more of the following four criteria:

- (a) it is associated with events or patterns of events that have made a significant contribution to the broad patterns of the history and cultural heritage of California and the United States; or
- (b) it is associated with the lives of persons important to the nation or to California's past; or
- (c) it embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- (d) it has yielded, or may be likely to yield, information important to the prehistory or history of the State and the Nation.

Cultural resources determined eligible for inclusion in the NRHP are, by State law, eligible for inclusion in the CRHR. Determination of the NRHP ineligibility of a property does not, however, preclude its potential eligibility for CRHR inclusion. The



potential CRHR inclusion of cultural resources at the site and in surrounding areas is being coordinated with the SHPO.

### 3.8.2 Environmental Consequences and Mitigation Measures

#### Standards of Significance

The Proposed Action would be considered to have a significant effect on cultural resources if it would:

- 3.8A Disturb cultural resources that are either listed or eligible to be listed in the NRHP; registered or eligible to be registered as a State Historical Landmark; or included in any responsible local inventory of historical properties
- 3.8B Disturb previously unknown important archaeological or historical resources
- 3.8C Have the potential to cause physical change which would affect unique ethnic cultural values
- 3.8D Restrict existing religious or sacred uses within the potential impact area

#### Impact 3.8-1: Prehistoric and Historic Resources

**PROPOSED ACTION:** *The Proposed Action could affect aboriginal and historic sites.*

Previous inventories of cultural resources within the site have identified one historic site, the Hart townsite, and four prehistoric archaeological properties. These prehistoric sites have been determined to be potentially eligible for inclusion in the NRHP.

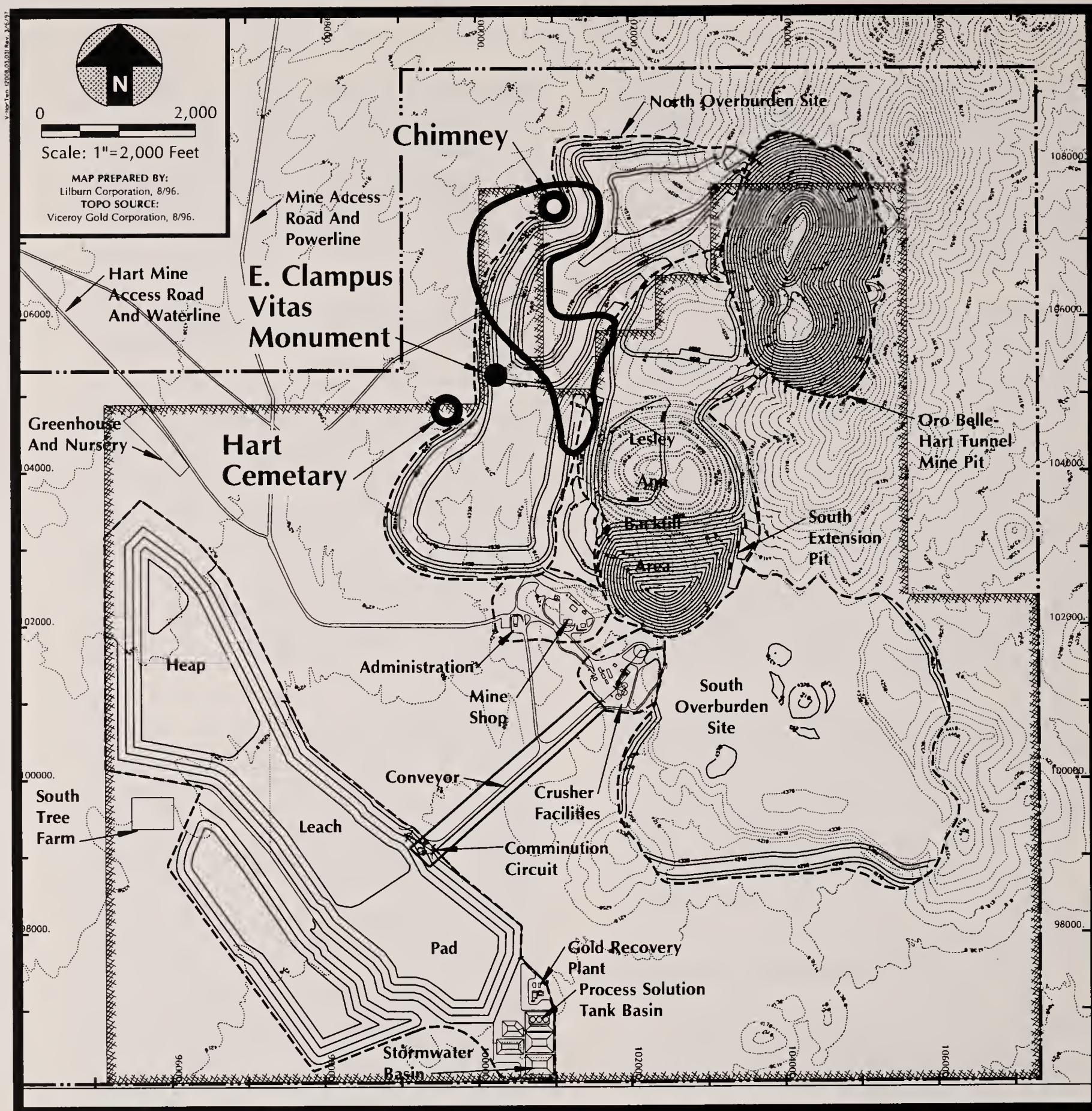
Major surface features of the former Hart townsite include the Hart Cemetery, chimney, and the E. Clampus Vitus Monument. The North Overburden Site would cover the E. Clampus Vitus monument in its current location, but avoid the Hart Cemetery and Chimney, as shown in Figure 3.8-1. The monument, however, would be moved to another location outside the "footprint" of the North Overburden Site.

Determination of NRHP eligibility and effect with respect to the historic Hart townsite has not been reached by BLM SHPOs. Field work and review to establish eligibility is expected to be completed June 1997. Determination that the site is not eligible, or approval of a data recovery program, would be necessary prior to disturbance of the Hart townsite.

Notwithstanding the fact that the physical remains of Hart have sustained adverse disturbance, the townsite still possesses abundant archaeological information important to the understanding of a significant chapter in the history of mining in the California deserts. Investigation of this exceedingly short-lived mining town provides a unique opportunity to portray facets of a narrow time period in the development of the American West.

Although many ghost towns occur in the western United States, Hart documents the early 20<sup>th</sup> century gold industry of the Mojave Desert . . . The integrity of the site has been seriously compromised by later clay mining, relic seeking, and other agencies, but certain loci . . . are largely undisturbed. The fact that the town newspaper was never microfilmed and has not survived makes the acquisition of information of the history of the town through normal historical avenues more difficult. The archaeological remains, although





## Proposed Action: Disturbance to Former Hart Townsite Surface Features



disturbed to a greater or lesser degree, are therefore important to the regional history. . . . Some of the loci themselves are not of significance, but taken together they all document aspects of the history of the early mining community of Hart. [Wilke, Schroth, and Swope 1986:20-21]

Thus impacts of the Proposed Action to the Hart townsite would be considered potentially significant before mitigation.

Site investigation will supplement the historical record of mining in the American West as well correct misconceptions about Hart and other similar settlements.

Any comments submitted by local Native American representatives pertaining to other sensitive areas would be considered in the evaluation process.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented and monitored for effectiveness. Employee education programs are in place, and a number of cultural resource sites have been recorded as a result of research done for the Castle Mountain Mine. Data recovery has been recommended as an appropriate course of action for the prehistoric sites in the vicinity of the mine site. For these four sites, actions to be undertaken include field work, laboratory studies, and documentation of field work.

The following measures, in addition to the project-specific mitigation measures following them, would adequately address potential cultural resource impacts for the Mine Plan Amendments.

## COUNTY CONDITIONS OF APPROVAL

14. In the event that project-related excavation uncovers a buried paleontological or archeological deposit on any of the patented mining claims, work in the area will be halted and, at the expense of the Applicant, a qualified paleontologist or archeologist will be contacted to evaluate the significance of the find and make recommendations as to its disposition. The Applicant shall complete and fund all mitigation measures deemed necessary.
96. In the event that a project-related excavation uncovers a buried paleontological or archaeological deposit on any of the patented mine claims, comments submitted by Native American representatives pertaining to these sensitive areas shall be considered in the evaluation process and artifacts of religious value made available to qualified Native Americans for religious ceremonies. Pursuant to State and federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson City, or its designate.

## BLM STIPULATIONS

79. Field work, laboratory studies, and documentation of research results shall be conducted for the five aboriginal sites (CA-SBr-5705, -5706, -5707, 5708, and -6055) located in the vicinity of the Mitigated Access Route and the project operations area. Comments submitted by local Native American representatives pertaining to these sensitive areas shall be considered in the evaluation process and artifacts of religious value made available through the BLM to qualified Native Americans for religious ceremonies. Pursuant to State and Federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson City, or its designate.

Four of these sites are located near the mine site, and one in the vicinity of the Mitigated Access Route.



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

80. The Operator shall construct a chain link fence, with no gate, around the Hart townsite cemetery and post a descriptive sign within the fence.
81. The Operator shall implement an informational program for employees to increase their awareness of the value of cultural resources and the need for their preservation. This program shall be achieved by providing a section on the prehistory and history of the project area in the employee manual. This section shall stress the fragility of the archaeological record and the responsibility of employees in preserving these resources. The manual shall be updated, as necessary to reflect new research findings which may occur relative to the history and prehistory of the area.
82. Access roads to areas of high cultural resource sensitivity in the project's vicinity shall be closed or rerouted.

Additional BLM Stipulations have been implemented at the Castle Mountain Mine pursuant to Record of Decisions for previous amendments to mining operations (CA-069-EA3-02, -EA4-16, -EA2-28, -EA2-18, and -EA2-23). These measures have been implemented and monitored for their effectiveness. The following measures address potential impacts to cultural resources.

#### ADDITIONAL BLM STIPULATIONS

Should the Operator uncover cultural resources during the course of operations, he shall do the following: a) leave the cultural resource in place; b) do not move or otherwise alter the condition of the resource affected; c) immediately bring this to the attention of the Area Manager; d) maintain the integrity of the cultural resource pending subsequent investigation.

**Additional Mitigation Measure 3.8-1:** In the event that evaluation of the Historic Hart townsite (CA-SBR-3060H) leads to a determination that the property is eligible for NRHP and CRHR inclusion, two basic mitigation alternatives are available.

First, potential adverse impacts of the proposed mine expansion could be mitigated by avoidance.

The second alternative consists of completion of an appropriate data-recovery program with the following performance standards:

- Define, recover, and analyze, with respect to relevant research and historical issues, representative samples of the archaeological materials and information contained within significant depositional loci subject to adverse impact.
- Document results of the undertaking in a comprehensive report detailing the research context, investigative methods, findings, and consequent recommendations of the data-recovery program.

Data recovery allows the acquisition of available scientific, historical, and archaeological information.

The primary value of the Hart townsite is the information archaeologic investigation of the site can provide concerning life in gold mining communities in the period. Data recovery will make any information the site can provide available to scholars. The physical destruction following data recovery of the site which contains no significant historic structures, would therefore be a less than significant impact following mitigation.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.



There would be no additional cultural resources impacts to the currently permitted mine operations or to the mine site. As currently permitted, Castle Mountain Mine would continue to operate until the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** *The South Overburden Site Expansion Alternative would avoid most of the cultural resources found at the Hart townsite.*

Implementation of this alternative would avoid the impacts to the Hart townsite associated with the Proposed Action. Thus it would reduce the severity of impacts to cultural resources when compared with the Proposed Action. The ramp located near the North Overburden Site could disturb historic and/or prehistoric sites, including a portion of the Hart townsite. However, these impacts would be limited to the specific disturbance associated with the access ramp and would avoid some of the historic and prehistoric sites located in this portion of the project site. As described for the Proposed Action, the significance of the prehistoric sites is demonstrated by their eligibility for inclusion in the NRHP, and the significance of the historic Hart townsite is under review.

Mitigation measures identified for the Proposed Action would be applicable to this alternative. Most of these measures, implemented as the original County Conditions of Approval and BLM

Stipulations, have already been implemented and monitored at the Castle Mountain Mine. These mitigation measures, in combination with the proposed additional mitigation measures for the Proposed Action, would adequately address potential cultural resource impacts associated with this alternative.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

## **Impact 3.8-2: Unique Cultural or Religious Sites**

***PROPOSED ACTION:*** *The Proposed Action would not affect any unique ethnic cultural values or restrict religious or sacred uses in the potential impact area.*

There are no known areas of unique ethnic cultural value in the project vicinity. Moreover, there are no known areas used for religious or sacred uses within the potential impact area. Therefore, the Proposed Project would not affect these values.

**Mitigation Measures:** No additional mitigation is required.

**Level of Significance after Mitigation:** Less than significant.

***NO ACTION ALTERNATIVE:*** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

There are no known areas of unique ethnic cultural value in the project vicinity. Moreover, there are no known areas used for religious or sacred uses within the potential impact area. Therefore, the Proposed Project would not affect these values.

**Mitigation Measures:** No additional mitigation is required.

**Level of Significance After Mitigation:** Less than significant.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** The South Overburden Site Expansion Alternative would not affect any unique ethnic cultural values or restrict religious or sacred uses in the potential impact area.

**Mitigation Measures:** No additional mitigation is required.

**Level of Significance After Mitigation:** Less than significant.

#### 3.8.3 Cumulative Impacts and Mitigation Measures

The Proposed Action would affect cultural and historic resources, including historic sites associated with the Hart townsite located at the proposed North Overburden Site and contribute to a cumulative loss of historic cultural resources in the region.

Prior to disturbance, data recovery would commence for the historic sites associated with the Hart townsite and four aboriginal sites located nearby. Two additional aboriginal sites will be evaluated by application of the Sparse Lithic Scatter

program. These measures, in combination with additional mitigation measures from the previous project EIS/EIR would reduce the cumulative cultural and historic resources impacts to a less than significant level.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

#### 3.8.4 Residual Adverse Effects

**PROPOSED ACTION:** Proposed mitigation measures would adequately reduce impacts on cultural and historic resources, including impacts to historic sites associated with the Hart townsite located at the proposed North Overburden Site to a less than significant level. Residual impacts, including the removal or overcovering of the Hart townsite following data recovery, would still occur but would be less than significant.

**NO ACTION ALTERNATIVE:** Since the No Action Alternative would result in no changes to the currently permitted mining operations, there would be no residual adverse effects.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** The South Overburden Site Expansion Alternative would result in no impacts to cultural resources on the site. Consequently, this alternative would result in no residual adverse effects.



**SECTION 3.9**  
**LAND USE**

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## **3.9 LAND USE**

### **3.9.1 Affected Environment**

#### **Introduction**

This section presents information on the existing uses on the site and in the surrounding area. Also described in this section are relevant plans or policies affecting the site.

#### **Land Ownership and Jurisdiction**

The Castle Mountain Mine operates on patented mining claims under private ownership, and on unpatented mining claims on public lands administered by the Bureau of Land Management (BLM), as shown in Figure 3.9-1. Surrounding property, including the New York Mountains, Castle Mountains, Piute Range, and others, is managed by the U.S. National Park Service (NPS) as part of the Mojave National Preserve. The Lanfair Valley is a mixture of private properties and NPS administered lands within the Mojave National Preserve.

#### **Existing Land Uses**

Existing land uses in the vicinity of the site are primarily grazing, mining, and passive recreation. Grazing takes place year-round in the Lanfair Valley and throughout the region. Grazing uses also take place on the Viceroy claims surrounding the site. Historic mining on the mine site included gold mining at Hart, and clay mining at the Big Chief Hill quarry, and at the North Clay Pit on the Milma patented claim. Passive recreation uses (hunting, sightseeing, hiking, and camping) take place in the vicinity of the site. The mine site is near the Mojave National Preserve and the East Mojave Heritage Trail.

Scattered residences occur, mostly in central/southern Lanfair Valley; there are no residences in the vicinity of the mine. The Castle Mountain Mine is located in a remote region of the Mojave Desert. Access is limited, and services are not generally available. The nearest town is Searchlight, Nevada, located over 25 miles (40 minutes driving time) from the mine. Land uses are, therefore, generally limited to open space activities. In addition, the types of uses permitted on public lands, which dominate the region, are restricted.

#### **Site Conditions**

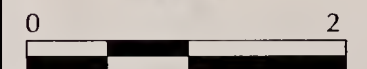
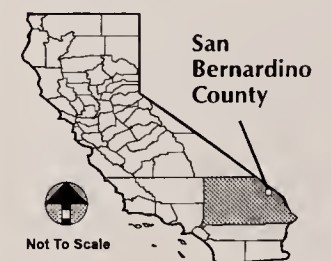
The Castle Mountain Mine is a modern open pit heap leach gold mine, permitted in 1990, and operating in accordance with federal, state, and local requirements. Portions of the mine site are fenced; activities are conducted completely within defined areas represented on the approved mine plan (refer to Figure 2.0-3). The nearest adjacent residences to the mine site are approximately 4 miles away.

The mining operation was previously evaluated for potential land use impacts, and has operated for more than 5 years. The current operation has been compatible with surrounding land uses, such as clay mining, recreational uses on the East Mojave Heritage Trail, and grazing. The existing mining operation is consistent with the California March 13, 1997 Desert Conservation Area (CDCA) Plan and the San Bernardino County General Plan, and operates under permits in compliance with the Surface Mining and Reclamation Act (SMARA) and other applicable regulations.

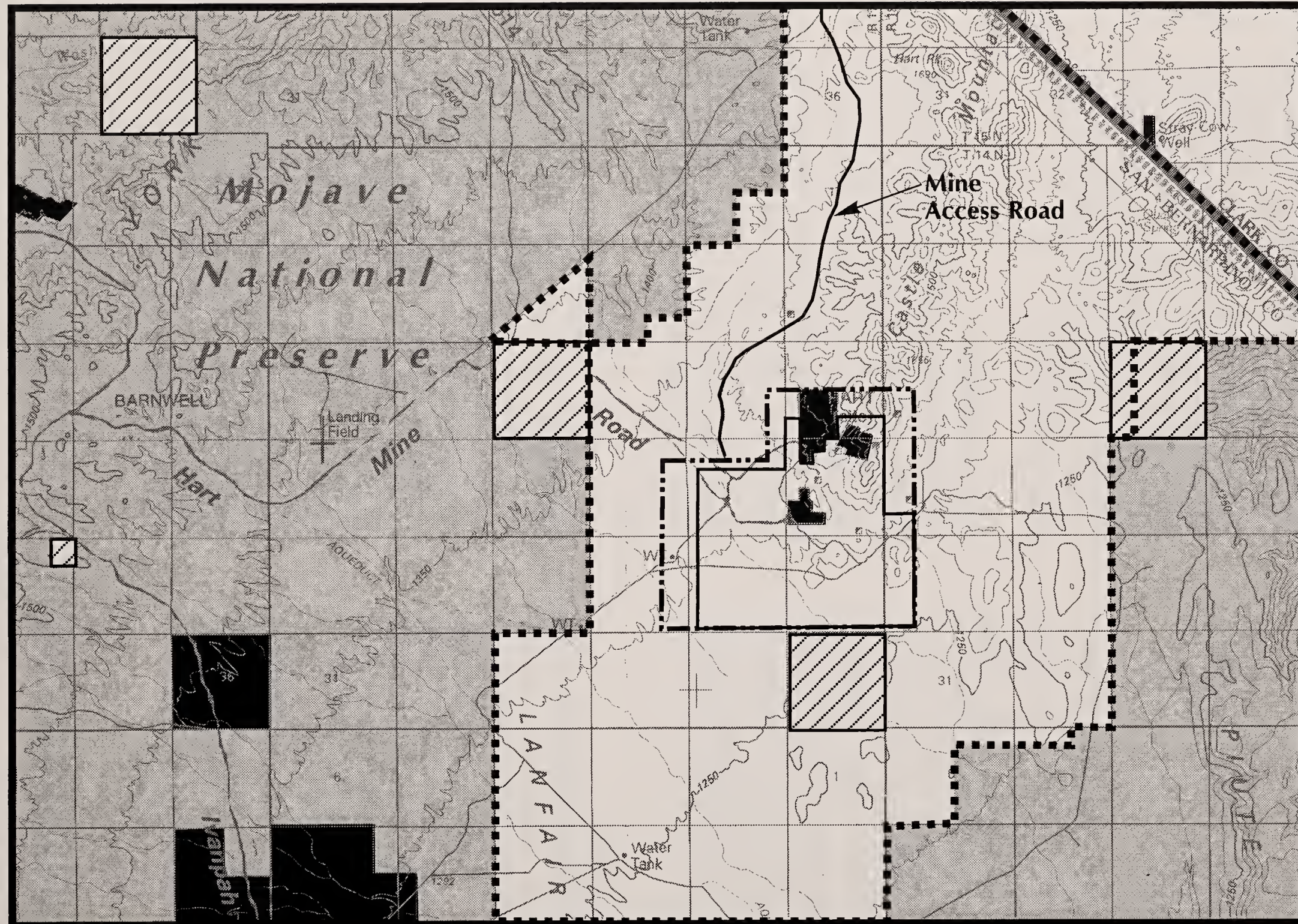


# Legend

- Existing Site Boundary
- Amended Mine Site Boundary
- Viceroy Claims Boundary
- Public Lands (BLM Administered)
- Patented and/or Private Lands
- State Lands
- Public Lands (NPS Administered)



Miles  
Map Prepared By:  
Lilburn Corp., 1996



## Land Use

CASTLE MOUNTAIN MINE  
San Bernardino County, California

Figure 3.9-1



## Relevant Plans and Policies

Since the preparation of the Previous EIS/EIR, the Mojave National Preserve has been created, replacing the East Mojave National Scenic Area. The Mojave National Preserve's purpose is, as with all units of the National Park Service, to:

"... conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations."

In addition to the overall purpose of national park lands, the specific purpose of the Mojave National Preserve is to

"... embrace the particular ecosystems and transitional desert type found in the Mojave Desert area lying between Death Valley and Joshua Tree National Parks on public lands."

The Mojave National Preserve is designated as a Preserve rather than a Park because activities such as hunting are allowed that are not normally allowed in national parks.

In recognition of the current operation at the Castle Mountain Mine, and the likelihood that additional ore discoveries would extend the mine life, specific provisions were made in the California Desert Protection Act (CDPA), the law which created the Mojave National Preserve, to exclude Viceroy's mining claims. The area covered by this exclusion included both Viceroy's active mine area and large areas not currently mined, but held as mining claims by Viceroy. This law specifically provided:

- (a) That all private lands (other than lands owned by the Catallus Corporation) in a township area in Lanfair Valley bounded on the southwest by Township 11N, Range 15E and on the northeast by

Township 13N, Range 18E, San Bernardino Base and Meridian are excluded from the preserve;

- (b) That Viceroy's claims are excluded from the preserve; and
- (c) That existing ranching activities on the Lanfair Valley grazing allotment are allowed to continue.

Other relevant policy statements made by Congress in establishing the Mojave National Preserve are as follows:

"The Mojave Desert area possess outstanding natural, cultural, historical, and recreational values meriting statutory designation and recognition as a unit of the National Park System.

The Mojave Desert area provides an outstanding opportunity to develop services, programs, accommodations, and facilities to ensure the use and enjoyment of the area by individuals with disabilities..."

Plans applicable to the Proposed Action are the CDCA Plan and the San Bernardino County General Plan. The majority of the mine site is public land, and is administered by the BLM. BLM is the Federal Lead Agency for this EIS/EIR. San Bernardino County administers SMARA, and is the State Lead Agency for this EIS/EIR. The land use designations applicable to the Proposed Action are those of the CDCA, which designates the site for multiple-use, Limited (Class L). This designation generally limits activities to "lower-intensity, carefully controlled multiple use of resources" to protect sensitive, natural, scenic, ecological, and cultural resource values. Mining and mineral exploration uses are permitted in Class L areas. The County General Plan designation for the private land within the project boundaries is Resource Conservation. This allows mining with an approved Conditional Use Permit.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

In compliance with the provisions of the California Desert Protection Act that created the Mojave National Preserve, the National Park Service, in conjunction with the BLM and U.S. Fish and Wildlife Service, is preparing a long-term, comprehensive management plan for the Preserve. This plan will be called the Northern and Eastern Mojave Plan. The Castle Mountain Mine operates outside the Preserve. However, certain monitoring wells and related access are located within the Preserve boundaries.

#### 3.9.2 Environmental Consequences and Mitigation Measures

##### Standards of Significance

The Proposed Action would be considered to have significant land use impacts if it resulted in any of the following:

- 3.9A Proposed land uses incompatible with existing or planned land uses on adjacent or nearby properties to the extent that those properties may no longer be used for existing activities or developed for permitted uses.
- 3.9B Proposed uses and activities would be in conflict with applicable ordinances and/or permit requirements.
- 3.9C Proposed actions would not be in conformance with approved land use plans.

#### Impact 3.9-1: Land Use Compatibility

**PROPOSED ACTION:** *The Proposed Action would result in expansion and an extended period of mining activities on the site. No changes in the types of land use are proposed.*

The Previous EIS/EIR found that the operation (as implemented) would not create land uses incompatible with those on the surrounding lands. Existing mining and recreation uses were not projected to be significantly affected by the mining operation. The Previous EIS/EIR found that the mining operation would result in the temporary (until reclamation is completed) loss of grazing land equivalent to 32 Animal Unit Months (AUMs), or less than 0.3 percent of the 12,168 AUMs authorized for use in the Lanfair Valley allotment. The Proposed Action will increase the area removed from grazing for the duration of mining by 469 acres, increasing the temporary loss of grazing land by an additional 20 AUMs, or less than an additional 0.2 percent of the Lanfair Valley AUMs.

Certain monitoring wells are located within the Mojave National Preserve. Well facilities and access should be compatible with the uses allowed in the Preserve, including sightseeing and hunting. Well facilities are unobtrusive, and the access is unpaved.

Mine land uses will be visible from the Preserve, as they are now. Although the Mojave National Preserve did not exist when the mine was originally permitted and constructed, the specific exclusion of the Viceroy claim block from the Preserve in the legislation creating the Preserve recognized the mine's existence as an ongoing adjacent



land use. Noise, lighting, and views of the mine will affect the atmosphere and experience of the areas of the Preserve closest to the mine. Given the previous existence of the Castle Mountain Mine, as well as the extent of historic mining in the area, these effects are not expected to result in a significant land use impact. More detail on visual impacts is found in Section 3.7 of this document.

The Applicant has agreed to implement a program to reclaim and revegetate some of the disturbed areas already present in the mining area. These disturbances arose as a consequence of historic mining activities at a time prior to the adoption of reclamation requirements under SMARA and 43 CFR 3809. Decisions as to what areas should be reclaimed would be determined by BLM following a field evaluation.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented and monitored for effectiveness. Continued implementation of the following measures would adequately address potential land use compatibility impacts for the Mine Plan Amendments, reducing them to a less than significant level.

#### COUNTY CONDITIONS OF APPROVAL

97. The Applicant shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by the BLM.

Fencing is in place.

98. Grazing lessees shall be compensated by the Applicant for livestock killed or injured by vehicles driven by project employees.

A cow was killed by a vehicle along the access road in 1992. No mine vehicles were known to be involved in the incident; however, the Mine Operator compensated the livestock owner.

100. Project site access routes shall be limited to the Project's operational period. Public use shall be discontinued following road reclamation.
101. Following project completion, the Lesley Ann/Jumbo and Oro Belle pits shall be accessible for potential recovery of low grade ore.

Overburden disposal plans include sequential backfilling of the Lesley Ann and Jumbo pits, and partial backfilling of the South Expansion deposit. Backfilling of the Lesley Ann Pit has already begun.

102. Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles.

#### BLM STIPULATIONS

83. The Operator shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by BLM. [DEIS p. 6.10-1.]
84. Grazing lessees shall be compensated by the Operator for livestock killed or injured by vehicles driven by project employees. [DEIS p. 6.10-2.]
85. Cattleguards shall be installed and maintained by the Operator at points where cattle control fences cross the access roads.
86. If project activities inhibit use of watering facilities by cattle, the Operator shall provide alternate water sources, in accordance with requirements of BLM.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

87. At the discretion of BLM, the abandoned tank, troughs, and corral in Section 23 shall be removed and disposed of by the Operator.
89. A historical marker shall be placed along the Searchlight Access Route at a location where the railroad bed of the former Barnwell and Searchlight Railroad is noticeable. The marker shall include a brief description of the history of the railroad.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no changes in land use beyond the continued operation of the mine.*

There would be no additional land use compatibility impacts. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The land use compatibility impacts of this alternative would not differ from those of the Proposed Action.*

The South Overburden Site Expansion Alternative would involve the disturbance of less area, reducing by 205 acres the loss of grazing land resulting from the expansion of the mining operation, as compared to the Proposed Action.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.9-2: Consistency with Regulations, Plans, and Policies

**PROPOSED ACTION:** *The Proposed Action would require an amendment to the approved Conditional Use Permit and BLM Stipulations.*

The Proposed Action would result in expansion of mining activities on the site. The Previous EIS/EIR found that the Castle Mountain Mine would be in conformance with the CDCA Plan, the San Bernardino County General Plan policies, and the requirements of SMARA. The Previous EIS/EIR described the federal regulations with which the operation would need to comply in order to be in conformance. These requirements were as follows:

- Submittal of a Plan of Operations.
- Complying with applicable Federal and State air quality standards, including the Clean Air Act.
- Complying with applicable Federal and State water quality standards.
- Complying with applicable Federal and State standards for the disposal and treatment of solid wastes, including the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act.



- Taking such action as may be needed to prevent adverse impacts to threatened or endangered species and their habitat.
- Complying with applicable Federal and State regulations for cultural resource protection, including Section 106 of the National Historic Preservation Act.
- Furnishing a financial guarantee for reclamation, if required by an authorized officer.
- Avoiding unnecessary and undue degradation.

The mine is currently operating under a BLM approved Plan of Operations and financial assurance.

The Previous EIS/EIR also found that the operation would be consistent with the San Bernardino County General Plan upon compliance with SMARA. The mine is currently operating under an approved Conditional Use Permit and an approved Reclamation Plan and financial assurance under SMARA.

The Proposed Action would require approval of revised federal and county permits and a revised Reclamation Plan. The Proposed Action would continue to be consistent with the CDCA Plan and the San Bernardino County General Plan.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no changes in land use beyond the approved operation.*

There would be no additional impacts related to consistency with regulations, plans, and policies. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would not differ in consistency with plans, policies, and regulations from the Proposed Action.*

Disposing of the overburden in an alternative onsite location as proposed under this alternative would not be inconsistent with any regulations or permit requirements. Since this alternative differs from the Proposed Action only in this element of the project, it would, as the Proposed Action, be consistent with relevant plans, policies, and regulations.

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### Impact 3.9-3: Recreation

**PROPOSED ACTION:** *The Proposed Action would modify the existing sightseeing opportunities at the historic Hart Town site, as this area would be mined.*

Existing mining operations have affected the East Mojave Heritage Trail. This impact has already been mitigated through rerouting the trail where mining activities displaced it. The Proposed Action would eliminate the Hart townsite viewpoint on the East Mojave Heritage Trail and modify existing sightseeing opportunities at the former Hart townsite and surrounding areas. Sightseeing opportunities near the Castle Mountain Mine include the former Hart townsite, located outside of the western perimeter of the proposed North Overburden Site; other historic markers in the area; and the agate field, located outside the northwestern perimeter of the proposed North Overburden Site.

Visible features of the former Hart townsite include the cemetery, a chimney, and a modern historical marker dedicated by E. Clampus Vitus. The North Overburden Site would cover the marker in its current location, but would not affect the other surface features associated with the former townsite. The historical marker will be moved to a new location outside the footprint of the North Overburden Site, eliminating any impacts on sightseeing opportunities related to the Hart townsite.

The agate field provides opportunities for rockhounding. This site would not be affected by implementation of the Proposed Action since it is outside the footprint of the proposed North Overburden Site.

Other recreational opportunities in the Lanfair Valley and other surrounding areas would be outside of the area affected by the Proposed Action. In addition to the existing interpretive station off Hart Mine Road, a new overlook could be created, as shown in Figure 3.9-2. The feasibility of creating this overlook will be determined by the Applicant through ongoing consultation with the BLM. Signage will be provided at selected locations to identify viewpoints and the East Overlook, if constructed.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. Implementation of these measures would adequately address potential recreation impacts for the Proposed Action, reducing them to a less than significant level.

#### COUNTY CONDITIONS OF APPROVAL

99. The Applicant shall provide a viewpoint at the Castle Mountain Project site, describing past and present gold mining operations in the area. The interpretive site would be located at a point overlooking both the old Hart townsite and the Lesley Ann Pit. The site shall include descriptive information about the current mining operations and the history of the Hart Mining District.

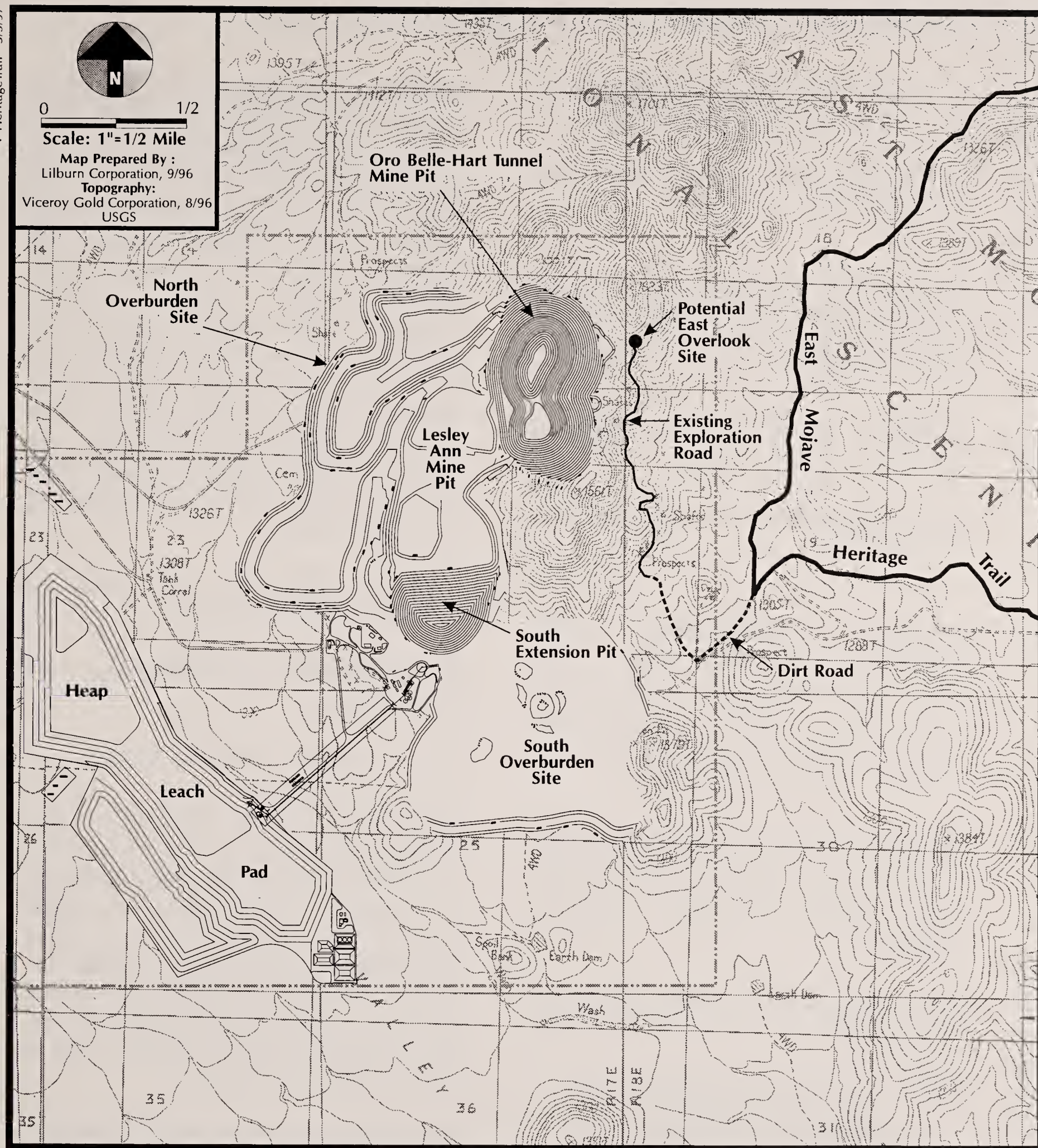
#### BLM STIPULATIONS

88. The Operator shall provide a viewpoint at the Castle Mountain Project Site, describing past and present gold mining operations in the area. The interpretive site will be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. the site shall include descriptive information about the permitting process, agencies involved in that process, measures taken to protect the environment, current mining operations, and the history of the Hart Mining







**Scale: 1"=1/2 Mile**

**Map Prepared By :**  
Lilburn Corporation, 9/96  
**Topography:**  
Viceroy Gold Corporation, 8/96  
USGS



### Legend

-  East Mojave Heritage Trail  
 Exploration Drilling Road  
 Existing Dirt Road Connection  
 Proposed East Overlook Location

## Potential East Overlook Location

**LILBURN**  
CORPORATION

CASTLE MOUNTAIN MINE  
San Bernardino County, California

**Figure 3.9-2**



### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

District. This descriptive information shall be approved by the BLM. [DEIS p. 6.10-2.]

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *The No Action Alternative would result in no changes in the East Mojave Heritage Trail beyond the approved operation.*

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *This alternative would not differ in effects on the East Mojave Heritage Trail from the Proposed Action; however, it would be less disruptive to the Hart townsite area.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### 3.9.3 Cumulative Impacts and Mitigation Measures

Although the Proposed Action would expand mining activities on the site, the Castle Mountain Mine would continue to be in conformance with relevant plans and policies including the CDCA, San Bernardino County

General Plan policies, and the requirements of SMARA and would not create land uses significantly incompatible with those on the surrounding lands. The impacts of the Proposed Action in combination with the ongoing mine operation could have cumulative effects on the experience of the adjacent Mojave National Preserve. Cumulative visual impacts are the most important of these, and are discussed in Section 3.7. The Proposed Action would increase the amount of land removed from grazing by approximately 490 acres. In addition, the Hart townsite viewpoint on the East Mojave Trail would be eliminated and potentially replaced.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance after Mitigation:** Less than significant.

#### 3.9.4 Residual Adverse Effects

**PROPOSED ACTION:** The Proposed Action would result in land use impacts related to consistency with regulatory plans and policies, an extension and expansion of mining activities and a reduction of 0.4 percent in total grazing in Lanfair Valley. It would also affect views from the East Mojave National Preserve. Although these impacts are less than significant following mitigation, residual adverse effects are expected.

**NO ACTION ALTERNATIVE:** Since the No Action Alternative would result in no changes to the currently permitted operations, there would be no residual adverse effects.



***SOUTH OVERBURDEN SITE  
EXPANSION ALTERNATIVE:*** South  
Overburden Site Expansion Alternative would  
have similar, but less severe, effects when  
compared to the Proposed Action. No  
residual effects are expected.





**SECTION 3.10**  
**HAZARDS**

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## 3.10 HAZARDS

### 3.10.1 Affected Environment

#### Introduction

This section presents information on potential hazards that could result from the Proposed Action or its alternatives.

#### Existing Hazardous Conditions

Existing conditions at the site relative to environmental health and safety for the general public are the result of previous mining activities and current activities associated with the ongoing mining operation on the site. The Castle Mountain Mine currently operates as an open pit heap leach gold mine on the site. The mine consists of open pits, crushing and other equipment, conveyors, a heap leach pad and solution spreading and storage equipment, haul roads, administration and other facilities, and an access road. More detail on the existing operation is found in Chapter 2.0, Project Description. Portions of the mine site are fenced.

In accordance with Bureau of Land Management (BLM) regulations 43 CFR 3802.5-2 and 43 CFR 3809.3-5, operators are required to take steps to remove hazardous conditions. The mine workings from the historic mining operations on the site, including shafts and adits, presented the greatest hazard to the general public prior to the initiation of the Castle Mountain mining operation. The old workings were closed with fencing, gates, or other appropriate barriers to prevent unauthorized access. Workings not posing a public safety hazard were left open to provide wildlife habitat.

Numerous maintained and unmaintained dirt roads traverse Lanfair Valley and the site. Driving conditions on these roads are variable and can be hazardous at excessive speeds.

The existing mining operation has generated no hazards. The mining operation operates under current permits and existing regulations, including OSHA, MSHA, and SMARA, that ensure the safety of the operation. Key permits are included in Appendix G.

### 3.10.2 Environmental Consequences and Mitigation Measures

This section focuses on the issues of public health hazards that could potentially be created by mining operations.

#### Standards of Significance

3.10A The Proposed Action would be considered to have a significant impact if it resulted in the creation of a public health hazard.

#### Impact 3.10-1: Processing Operations Hazards

**PROPOSED ACTION:** *The Proposed Action would create additional facilities, thereby continuing the potential for continued processing and operations hazards.*

The Proposed Action would result in expansion of mining activities on the site, including creation of new mine pits, overburden site, and additional heap leach areas. These facilities would continue the potential for hazards identified in the Previous

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

EIS/EIR (primarily the concern for safe slopes and restricted access points following reclamation), but mitigation measures incorporated into the existing operation would ensure that continuation and expansion of the operation would not create any additional impacts beyond those identified for the existing operation.

#### ***Mining Operations***

Explosives could pose a public safety hazard if the public were exposed to blasting materials or explosives.

Ammonium Nitrate Fuel Oil (ANFO) explosives are used during mining operations to break and loosen overburden and ore in the mine pits. Once loosened, the overburden and ore are loaded into haul trucks for transport to stockpiles or crushers. Blasting is conducted six days a week. Explosives are stored in a secured powder magazine constructed and maintained in accordance with federal and local permit requirements. The site is fenced, and the primary access is gated, with 24-hour security.

#### ***Processing Operations***

Heap leach processing uses a dilute cyanide solution. Cyanide is an acute toxin that is poisonous to humans and wildlife. Worker safety is protected through OSHA and MSHA requirements for training and handling. Potential public health hazard concerns are related to the potential for direct exposure to the solutions, or the accidental release of solutions into groundwater used as a drinking source.

#### ***Cyanide Solution***

There are more than 50 gold mines using heap leach technology in the United States. Although employees at these heap leach mines

work in close proximity to the process solutions, there are no known cases of accident or severe illness directly due to this cyanide exposure. This safety record is a result of several factors:

- Cyanide in the process solutions is a dilute concentration (less than 500 parts per million (ppm)).
- While cyanide is lethal in large single (acute) doses, it does not accumulate in the body as a result of a number of small exposures over time (it has low chronic toxicity).
- The pH of the solution is maintained above 10.0 so that only very small quantities of hydrogen cyanide gas (HCN) are vaporized.
- Procedures for the delivery, storage, and addition of cyanide are well established and controlled to avoid human exposure.

Sodium cyanide is delivered to the Castle Mountain Mine in 36,000 pound DOT approved bulk truck loads. The bulk loads are delivered in dry form and solubilized in the delivery tanker. The trained driver of the bulk tanker does the mixing of the cyanide solution (25 to 30 percent) and all transfers of solution are handled by centrifugal pumps contained on concrete areas. Caustic soda is added as part of the sodium cyanide manufacturing process and maintains a pH of 12 to avoid hydrocyanic gas generation. The bulk delivery system allows the Castle Mountain Mine employees to avoid any cyanide exposure due to mixing.



- MSHA requires rigid employee training on the handling of reagents and process solutions and includes provisions for monitoring worker exposure levels.

The most frequently used water quality standard for cyanide is a relatively low 0.2 ppm. The factor of safety for human consumption of potable water at this concentration is very high. The Regional Water Quality Control Board (RWQCB) regulations also require that the construction of containment systems be quality-controlled by registered professionals and final operating conditions be monitored, with frequent reporting.

In addition to the facilities engineered for containment, protection of water quality is also provided by the reactivity of cyanide, which results in its volatilization and its natural degradation to nontoxic carbon and nitrogen compounds, and its fixation with the trace metals in the environment to form less toxic complexes over time. While this natural degradation is a well known phenomenon, the time and travel distance for degradation to occur cannot presently be predicted with sufficient accuracy for all conditions to allow these forms of natural cyanide attenuation to be relied upon as a method of containment. Instead, they represent an unquantifiable level of redundancy toward reducing the potential of exposure from this processing reagent.

### **Agglomeration**

Safety procedures are implemented to prevent hazards which could be associated with the agglomeration of ore in the crushing and conveying circuit. During agglomeration, a barren cyanide solution is added to enhance gold extraction. To preclude release of solution to unprotected soils, the

agglomeration facilities are located over impervious liners.

### **Heap Leach Process**

Potential release of chemicals used for the heap leach and gold stripping process could occur during operations. The heap leach system consists of the heap leach pads, where ore is leached, and solution storage tanks where cyanide solution is contained. The heap leach pads and basins containing the solution storage tanks are lined with impermeable liners placed over graded and compacted soil. These liners are designed to meet requirements of the RWQCB, Colorado River Basin, which include specific design and monitoring standards. The conveyance system for cyanide solutions is contained within closed pipes to preclude potential release of solution. Design requirements of the solution storage facilities also include sizing to accommodate additional run-off which could occur from large storm events.

After the final leaching is completed, the ore heap will be decommissioned according to RWQCB procedures to destroy the cyanide. The heap will be rinsed to reduce the residual cyanide content to the level stipulated by the RWQCB Waste Discharge Order, using fresh water or a neutralizing solution.

### **Gold Recovery Process**

Gold-bearing solution from the pregnant solution is piped to the gold recovery plant to remove the gold through a carbon adsorbing process. The gold recovery plant is constructed on curbed concrete pads to contain the volume of potential spills from tanks containing cyanide solution. Ancillary storage and containment facilities are located at the gold recovery plant for the following chemicals used in the process:

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- Sodium cyanide
- Sodium hydroxide
- Acids

Each storage area is surrounded by dikes or curbs capable of containing fluids in the event of a spill. In order to ensure proper cleanup for spills, a Spill Prevention, Control, and Countermeasures Plan (Viceroy, 1990, revised 1996) and a Business Emergency Contingency Plan (Viceroy, 1990, revised 1995) was implemented prior to initiation of gold recovery operations. All employees using these chemicals are thoroughly trained in spill prevention and cleanup procedures.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. All of these measures except those related to mine closure have been implemented and are monitored on an ongoing basis for effectiveness. Continued implementation of the following measures would adequately address potential processing operations hazards for the Mine Plan Amendments.

#### COUNTY CONDITIONS OF APPROVAL

9. At the time of project decommissioning, all equipment, buildings, structures and refuse shall be removed from the site, all hazards mitigated, and reclamation completed per the approved Mine/Reclamation Plan.
30. The Applicant shall abate potential impacts to surface and groundwater associated with the onsite storage of fossil fuels, chemicals, explosives, reagents and use of dust binding agents by mitigations through the implementation of applicable RWQCB, DEHS and San Bernardino County Fire Marshall regulations. Use of above ground storage tanks requires the preparation of a contingency plan for secondary containment of

potential leaks to the satisfaction of the RWQCB and the DEHS, including the following:

- A containment area designed to accommodate the volume of the tank plus a 24 hour, 100-year storm.
- If a series of tanks are involved, containment shall be provided for 10 percent of the combined capacity plus a 24-hour, 100-year storm.

Below ground storage tanks shall be subject to the following RWQCB regulatory criteria:

- All tanks shall be registered with the RWQCB and shall conform to RWQCB construction standards. The DEHS will be responsible and issue permits for implementation of these requirements and standards.
- The County shall inspect and approve such tanks, every 3 years, for structural integrity.

The mine operation is in continued compliance with these regulations.

31. A "Business Plan" as defined in Chapter 6.95 of the Health and Safety Code, detailing the plan for emergency release or threatened release of hazardous materials and wastes shall be required. Obtain clearance from DEHS/Hazardous Materials Section.

A Business Plan has been prepared and filed as required.

45. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIR p. 6.3-2; (Refer also to Condition of Approval No. 30, above, concerning capacity of containment area)].
46. The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids.
76. A vehicle shall be onsite for emergency response in the event of an accident. The Applicant shall



maintain first aid and fire suppression equipment onsite. Procedures for emergency response shall be developed for use in the event of an accident. [DEIR p. 6.7-2.]

A Spill Prevention, Control, and Countermeasures Plan has been prepared and is on file.

77. Personnel trained in security shall be onsite on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons. [DEIR p. 6.7-2.]
80. The project shall comply with applicable MSHA standards to achieve a safe working environment. Rules and regulations of DEHS shall be followed to assure that no significant public health hazard would be created. [DEIR p. 5.7-1.]
81. Fences, and earthen berms to block vehicular access into open pit areas, shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors [DEIR p. 5.7-7.]

#### BLM STIPULATIONS

58. A vehicle shall be on-site for emergency response in the event of an accident. The Operator shall maintain first aid and fire suppression equipment on-site. Procedures for emergency response shall be developed for use in the event of an accident. [DEIS p. 6.7-2.]
62. The Project shall comply with applicable MSHA standards to achieve a safe working environment. Rules and regulations of DEHS shall be followed to assure that no significant public health hazard would be created. [DEIS p. 5.7-1.]
63. Fences, and earthen berms to block vehicular access into open pit areas, shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. [DEIS p. 5.7-7.]

**Level of Significance After Mitigation:** Less than significant.

**NO ACTION ALTERNATIVE:** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional hazard related impacts from processing operations hazards to the currently permitted mine operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:** *The alternative overburden configuration would not modify the existing or proposed processing operations. The impacts of this alternative would therefore not differ from those of the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

#### **Impact 3.10-2: Hazardous Materials**

***PROPOSED ACTION:*** *The Proposed Action would result in expansion of mining activities and continued use of potentially hazardous materials.*

##### ***Domestic and Industrial Waste Disposal***

The types of wastes generated by the Proposed Action are shown in Table 3.10-1. Wastes generated are temporarily stored on the site in a manner acceptable to the DEHS.

Waste oils and other waste hydrocarbon products are stored in a tank in a contained area. These are then recycled or periodically removed offsite by a licensed waste disposal contractor to an approved recycler or disposal site. Small amounts of waste considered hazardous, such as soils and solvents are either detoxified onsite, recycled, or packed and disposed of according to rules and regulations for waste disposal set forth by DEHS. These procedures would be continued with the Proposed Action.

##### ***Wastewater Treatment Facility***

A septic tank and leach field system approved by DEHS is used to dispose of domestic wastewater generated in the area of the processing plant, administration area, and the mine vehicle maintenance building. Portable toilets are used in the area of mine pit operations. Portable toilet waste is removed offsite by a contracted commercial hauler. These procedures would be continued with the Proposed Action.

##### ***Transport of Chemical Reagents and Fuels***

Chemical reagents, including ammonium nitrate, sodium cyanide, sodium hydroxide, lime, and diesel fuel and propane, are used at the Castle Mountain Mine. Ammonium nitrate (a fertilizer) is shipped in granular form in bins. Sodium cyanide is delivered in 36,000 pound lots as briquettes in tanker trucks. Upon arrival at the site, the tanker is connected to a transfer station. An alkaline solution is circulated through the tanker to dissolve the briquettes. When dissolution is complete, the tanker is rinsed, disconnected from the transfer station and returns to the supplier's warehousing facilities by road. Sodium hydroxide is delivered as a liquid or as a solid flake. Calcium hypochlorite is shipped in 100-pound drums in pellet form. Calcium hypochlorite is kept on hand to neutralize cyanide and stored in its received form. Cement and lime used in agglomeration are delivered to the site in truckload quantities and transferred into silos in the agglomeration area. Other chemicals stored onsite are delivered by truck, as required. Trucks containing hazardous chemicals are properly labeled and equipped to Interstate Commerce Commission (ICC) specifications. In the event of an accidental spill, these materials could cause a public health hazard depending on the proximity of people to a spill site, or if the chemicals were to enter the air or surface waters used for human consumption.

Measures were incorporated into the Castle Mountain Mine design to contain spills onsite and facilitate cleanup. Spills offsite would most likely be caused by an accident involving vehicles transporting the chemicals. The ICC sets standards for the safe transport of hazardous cargos. The Applicant contracts



TABLE 3.10-1 WASTE GENERATED BY THE CASTLE MOUNTAIN MINE		
Waste Type	Waste Generated	Disposal Procedure
Domestic waste	Paper Plastic Foods/garbage Glass	Removed to Class III landfill
Industrial waste (non-hazardous)	Tires Metal Wood	Removed to Class III landfill
Industrial waste (hazardous)	Vehicle oil Solvents Reagent/containers	Recycled or removed to appropriate hazardous waste landfill or treatment facility

Only with suppliers using equipment and procedures approved by the ICC.

The Applicant has developed a Spill Prevention, Control, and Countermeasures Plan for management of reagents. The Plan includes the following elements:

### **Reagents**

- Types of reagents used
- Operation, maintenance, and safety procedures
- Emergency planning
- Local agency arrangements
- Hazardous material incident reporting
- Cleanup and detoxification
- Record keeping
- Plan implementation and amendment

### **Oil Storage**

- Types of oil used
- Spill containment facilities

- Operation, maintenance, and safety procedures
- Emergency planning
- Record keeping

Plant personnel and appropriate management staff receive training in proper operating procedures and are informed about implementation and use of the Plan.

### **Security**

Security and safety measures are employed to minimize the risk of accident or injury to unauthorized or untrained persons. These measures include:

- Fencing at facilities where activities could endanger employee or public safety, including the mine pits, heap leach pads, solution storage area, and the gold recovery plant.
- Earthen berms and fencing at locations to restrict access to mine pits and haul roads by unauthorized vehicles.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- Personnel trained in security are onsite 24 hours each day.

#### **Safety**

Employee training procedures are implemented in accordance with MSHA regulations to ensure that all employees are familiar with potential hazards that could be encountered in performing their jobs, and in the proper handling of chemicals. First aid equipment is provided at appropriate locations.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. All of these measures have been implemented as part of existing mine operations and are monitored on an ongoing basis for effectiveness. Continued implementation of the following measures would adequately address potential impacts related to use of hazardous materials for the Mine Plan Amendments and would reduce this impact to a less than significant level.

#### COUNTY CONDITIONS OF APPROVAL

78. Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures. [DEIR p. 6.7-2.]
  79. Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting. [DEIR p. 5.7-1.]
  82. Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed offsite by a contracted hauler. [DEIR p. 5.7-5.]
  84. Trucks containing hazardous chemicals shall be properly labeled and equipped to ICC specifications. [DEIR p. 5.7-5.]
  85. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials. [DEIR p. 5.7-6.]
  87. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIR p. 6.7-2.]
- All of the above measures are part of ongoing mine operations.

#### BLM STIPULATIONS

9. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. [DEIS p. 6.2-1.]

This measure was implemented in the original project design.

18. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIS p. 6.3-2.]
19. The Operator shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including: [DEIS p. 6.3-1.]
  - a. Impermeable synthetic liners for process solution basins and heap leach pads.
  - b. Sealed drainage and collection facilities to transport or contain leaching solution.
  - c. Diked leach pads to confine and control drainage from the leach piles.
  - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and drain down of solution



from the leach pads in the event pumps could not operate because of a power failure.

- e. Drainage or diversion ditches outside the heap leach system to preclude entry of storm runoff into the system.
  - f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.
  - g. Regularly prepared monitoring reports on the current status of operations.
  - h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion.
56. Hydrogen cyanide shall be routinely monitored at the processing facilities as a requirement of the employee health and safety plan implemented according to MSHA Regulations. In addition, the Operator shall periodically perform airborne HCN surveys to verify that the potential public exposure to cyanide is inconsequential. [DEIS p. 6.6-3.]
57. A spill prevention, control, and countermeasures plan shall be developed to establish procedures for spill prevention and cleanup. [DEIS p. 6.7-1.]
59. Personnel trained in security shall be onsite on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons. [DEIS p. 6.7-2.]

A Spill Prevention, Control, and Countermeasures Plan and a Business Emergency/Contingency Plan have been prepared and are on file.

- 60. Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures. [DEIS p. 6.7-2.]
- 61. Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with federal and local requirements. Only personnel holding valid blasting certificates

shall be allowed to initiate blasting. [DEIS p. 5.7-1.]

- 64. Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed offsite by a contracted hauler. [DEIS p. 5.7-5.]
- 66. Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications. [DEIS p. 5.7-7-5.]
- 68. Lime, sodium hydroxide, or other alkaline material shall be added to the cyanide solution to reduce the potential for emitting hydrogen cyanide. [DEIS p. 5.7-2.]
- 70. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIS p. 6.7-2.]

These measures are part of ongoing mine operations.

***Level of Significance After Mitigation:*** Less than significant.

***NO ACTION ALTERNATIVE:*** As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.

There would be no additional hazards related impacts from hazardous materials to the currently permitted operations. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

***Mitigation Measures:*** No additional mitigation would be necessary.

***Level of Significance After Mitigation:*** Less than significant.

### 3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** *This alternative would have the same level of impact related to use of hazardous materials as the Proposed Action.*

***Mitigation Measures:*** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

***Level of Significance After Mitigation:*** Less than significant.

#### **Impact 3.10-3: Transportation**

***PROPOSED ACTION:*** *The Proposed Action would result in continued use of access and haul roads.*

The Applicant is responsible for regular maintenance of these road segments during the project life, including grading, graveling, and dust suppression.

The potential for accidents on the mine access roads could occur if safe driving speeds are not observed. A maximum speed limit of 35 miles per hour is posted on these roads. Employees are instructed for proper vehicle handling and safe speeds.

***Mitigation Measures:*** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented as part of mine construction and operation. Continued implementation of the following measures would adequately address potential

transportation of hazardous materials hazards for the Mine Plan Amendments and reduce this impact to a less than significant level.

#### **COUNTY CONDITIONS OF APPROVAL**

86. The Applicant shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted. [DEIR p. 6.7-2; FEIR Section 3.2.]

87. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIR p. 6.7-2.]

#### **BLM STIPULATIONS**

67. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials. [DEIS p. 5.7-6.]

69. The Operator shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted. [DEIS p. 6.7-2; FEIS Section 3.2.]

These measures are part of ongoing mine operations.

***Level of Significance After Mitigation:*** Less than significant.

***NO ACTION ALTERNATIVE:*** *As none of the proposed Mine Plan Amendments would be implemented with this alternative, no additional environmental impacts would occur.*

There would be no additional hazard-related impacts from transportation to the currently permitted operations. As currently permitted,



the Castle Mountain Mine would continue to operate through the year 2000.

**Mitigation Measures:** No additional mitigation would be necessary.

**Level of Significance After Mitigation:** Less than significant.

**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVES:** *This alternative would have the same level of impact related to transportation as the Proposed Action.*

**Mitigation Measures:** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

**Level of Significance After Mitigation:** Less than significant.

### Impact 3.10-4: Public Access

**PROPOSED ACTION:** *The Proposed Action would result in the exposure of people to hazards on the project site.*

The Proposed Action would result in the exposure of people involved in recreational uses in the vicinity of the site to the hazards of the mining operation during operation, and to the hazards of the reclaimed site, such as steep cliffs, following reclamation.

Areas where mining activities could endanger the public will be fenced and/or otherwise controlled through security patrols or other means to limit public access to these areas.

Personnel trained in security are onsite 24 hours a day.

A potential overlook to the mine could be provided at the upper end of the road above the Oro Belle-Hart Tunnel Pit. Hazards associated with this overlook, if it is constructed, could expose people involved in recreational uses near the mine site to hazards associated with the reclaimed site. Of particular concern would be the pit high walls that would be directly below the overlook. The overlook would not be constructed until its feasibility is determined by the Applicant in ongoing consultation with the BLM. Of particular concern is public safety and potential liability. These potential public safety issues are also associated with the interpretive station and the parking areas.

**Mitigation Measures:** Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented as part of mine construction and operation. Continued implementation of the following measures in combination with the following additional mitigation measure would adequately address impacts related to exposure of the public to onsite hazards.

### COUNTY CONDITION OF APPROVAL

7. Pit walls shall be constructed in accordance with the standards of the Mine Safety and Health Administration.

### BLM STIPULATION

91. Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles. [DEIS p. 5.7-8.]

#### ***Additional Mitigation Measure 3.10-1a:***

Earthen berms shall be constructed where necessary to restrict access to mine pits from recreational areas such as the East Mojave Heritage Trail, the agate field, viewpoints and east overlook, historic markers, and the interpretive station.

***Level of Significance After Mitigation:*** Less than significant.

***NO ACTION ALTERNATIVE:*** As none of the proposed Mine Plan Amendments would be implemented with the alternative, no additional environmental impacts would occur.

There would be no additional exposure of the public to hazards at the mine site beyond that occurring with the current mining operation and approved reclamation. As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000.

***Mitigation Measures:*** No additional mitigation measures would be necessary.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVES:*** This alternative would have the same level of impacts related to exposure of the public to hazards as the Proposed Action.

***Mitigation Measures:*** As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

***Level of Significance After Mitigation:*** Less than significant.

#### **3.10.3 Cumulative Impacts and Mitigation Measures**

Impacts related to hazards result from processes and materials associated with the extraction of gold from ore bodies. The Proposed Action would continue the potential for these hazards for a longer period of time. However, no new hazards would be created. All health and safety procedures at the Castle Mountain Mine are regulated by federal, state, and local laws. Mitigation measures already incorporated into the existing operation would ensure that expanded mine life would not create any additional impacts. Therefore, there would be no significant cumulative impacts related to hazards.

***Mitigation Measures:*** No additional mitigation would be necessary.

***Level of Significance After Mitigation:*** Less than significant.

#### **3.10.4 Residual Adverse Effects**

***PROPOSED ACTION:*** The Proposed Action would result in hazard related impacts from processing operations, hazardous materials, and transportation. Mitigation measures incorporated into this alternative would adequately reduce identified impacts to a less than significant level. There would be no residual adverse effects.

***NO ACTION ALTERNATIVE:*** Since the No Action Alternative would result in no changes to the currently permitted operations, there would be no residual impacts.

***SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE:*** Mitigation measures incorporated into this alternative



would adequately reduce identified impacts to a less than significant level. There would be no residual adverse effects.





**CHAPTER 4.0**  
**OTHER NEPA/CEQA TOPICS**

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## 4.0 OTHER NEPA/CEQA TOPICS

### 4.1 RELATIONSHIPS BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The Proposed Action would result in additional surface disturbances over 490 acres at the existing Castle Mountain Mine. This would result in a cumulative impact of 1,380 acres of surface-disturbing activities over the approximate 20-year mine life (through year 2010). Long-term and cumulative impacts would be predominantly associated with these surface disturbances, and restricted to the mine site area.

Benefits resulting from this short-term use of the environment for the proposed continuation of mining activities are primarily socioeconomic. Approximately 200 people are currently employed at the mine. Secondary employment is also realized through nearly \$8,000,000 in annual expenditures for goods and services in the region. The Applicant believes that the Proposed Action is justified at this time because of these economic and social benefits generated by the project. Project-related employment, direct and indirect expenditures associated with ongoing mining activities, and property tax would contribute to the viability of the local and regional economy for an additional 10 years beyond the currently permitted operations. The Applicant has

indicated that in excess of \$80 million was invested in exploring, permitting and constructing the mine, and that an additional \$52 million has been invested since operations commenced in 1992. Continued operation, therefore, benefits the regions' economy; county, state, and federal governments through taxes and fees; and investors of the publically-owned mining company. Development of mineral resources is also in the national interest to help satisfy industrial and security needs.

The project area has historically been used primarily for mining activities. Approval of the Castle Mountain Mine in 1990 further committed this site to a mining use. The commitment of the additional 490 acres, therefore, would do little to narrow the range of other beneficial land uses of this site. However, continued operation would exclude grazing uses for the mine life, and continue to restrict access by the public for recreation purposes. Continued operation also delays much of the planned reclamation, so re-establishment of vegetation and wildlife habitat would need to be rescheduled.

The primary cumulative and long-term effect of the project is the change to the landscape, altering the site aesthetics. Although mitigations are planned to reduce this effect, the landscape will be permanently altered. Long-term risks to public and safety are also recognized, but planned to be minimized through design features, but steep mine pit slopes that will remain following closure and reclamation can be hazardous to future recreationists who violate safety warnings.



#### 4.0 OTHER NEPA/CEQA TOPICS

Proper reclamation and the remote location of the site minimize public safety risks.

#### 4.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

##### **Energy and Materials**

The Proposed Action or South Overburden site Expansion Alternative would commit the use of non-renewable energy sources. The use of non-renewable energy sources associated with the continued mine operations include diesel fuel and propane for power production and mine operations, diesel fuel, gasoline, and oil for mining equipment and transportation vehicles. This commitment of resources, however, would be short-lived. At the cessation of mining, mine site facilities and equipment would be removed in accordance with the approved Reclamation Plan. The Proposed Action and South Overburden Site Expansion Alternative would not require any additional building materials since no additional structures are proposed. Therefore, no significant irreversible and irretrievable commitment of non-renewable energy or materials is expected.

##### **Geology and Minerals**

Mining operations associated with the Proposed Action and South Overburden Site Expansion Alternative would extract mineral resources from the mine site. This would result in an irreversible and irretrievable development of known gold reserves. However, the development of these gold reserves would not preclude their future use; the resource would be made available for use by society by the mining and processing activities.

##### **Water Resources**

The Proposed Action and South Overburden Site Expansion Alternative would result in additional use of Lanfair Valley groundwater resources through an extended period of withdrawal. This removal would total less than 1 percent of the total groundwater resources in Lanfair Valley. Following mining, the aquifer would recover through natural recharge.

##### **Vegetation**

The Proposed Action would remove an additional 490 acres of vegetation; an additional 325 acres of vegetation would be removed by the South Overburden Site Expansion Alternative. Plant communities found at the mine site are abundant in Lanfair Valley and throughout the East Mojave Desert, and no special status plant species occur in the mine site vicinity. The site will be revegetated in accordance with the approved mine reclamation plan and will utilize locally-collected plant species and seed sources to re-establish the disturbed plant communities. Criteria for revegetation success includes density and diversity standards. Because of relatively slow growth rates in this arid environment, this disturbance would be a lengthy process; it could take decades after the completion of mining to completely recover.

##### **Wildlife**

The Proposed Action would remove an additional 490 acres of wildlife habitat; an additional 325 acres of wildlife habitat would be removed by the South Overburden Site Expansion Alternative. An unknown number of small mammals, reptiles, birds, and invertebrates would be displaced and/or lost, including some potential wildlife mortality associated with continued traffic. The



habitats found on the mine site are abundant in the Lanfair Valley and throughout the East Mojave Desert. Direct impacts to wildlife, including desert tortoise would be limited to the life of the mine. The site will be revegetated in accordance with the approved Reclamation Plan to re-establish usable habitat for wildlife species.

### **Air Quality**

The Proposed Action and South Overburden Site Expansion Alternative would result in continued generation of air contaminant emissions, especially  $\text{NO}_x$  and  $\text{PM}_{10}$ . These impacts would be limited to the life of the mine.

### **Visual Resources**

The Proposed Action and South Overburden Site Expansion Alternative would irreversibly change the visual character of the site. These changes would result from topographic modifications and vegetation loss associated with the areal expansion and continuation of mining operations. Mitigation measures, particularly revegetation, would reduce the severity of these impacts. However, when viewed from locations within the Lanfair Valley, including the Mojave National Preserve, the topographic modifications would remain noticeable.

### **Cultural Resources**

The Proposed Action would cover prehistoric and historic sites, including portions of the Hart townsite, with overburden rock. The South Overburden Site Expansion Alternative would avoid most of these impacts. Covering of the Hart townsite under the Proposed Action could adversely affect recreationists desiring to visit the site. However, remaining surface features would not be disturbed. Data recovery would increase the information

available to the general public that could otherwise be lost by uncontrolled activities. However, these sites, as they currently exist on the site, would be altered by the Proposed Action.

### **Land Use**

There would be no change in land use on the mine site from the Proposed Action or South Overburden Site Expansion Alternative. Historically, mining has been an important land use in the mine site vicinity. The Mojave National Preserve, which was established after the commencement of mining, would not be affected, although the mine would continue to be viewed from those portions of the Preserve located in Lanfair Valley. Topographic modifications following reclamation could limit the types of land uses suitable for the mine site. However, the site should remain suitable for wildlife habitat, as planned.

The Proposed Action would result in the loss of grazing forage during mining and subsequent reclamation. Grazing land would be irreversibly lost from the mine pit areas. However, grazing activities are historically located on the valley floor grasslands, not on mountain slopes in the mine pit areas.

### **Hazards**

The Proposed Action and South Overburden Site Expansion Alternative would result in the exposure of people involved in recreational uses of the site to the potential hazards of a reclaimed mine site. The primary hazard after reclamation would be steep mine pit walls for those recreationists who violate safety warnings.

### 4.3 ENVIRONMENTAL JUSTICE

Executive Order No. 12989 was issued in 1994 and states:

"To the greatest extent practicable and permitted by law, and consistent with principles set forth in the report on the National Performance Review, each Federal agency shall make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations..."

Since the issuance of the Order, the Department of the Interior has notified all of its agencies that environmental documents should evaluate the impacts of any proposed actions on minority and low-income populations, as well as the equity of the distribution of the benefits and risks of those decisions.

The Proposed Action and South Overburden Site Expansion Alternative would not result in any significant adverse socioeconomic impacts when compared to the No Action Alternative. The Proposed Action is consistent with Executive Order 12898 and the Department of the Interior policy on environmental justice.

### 4.4 GROWTH INDUCING IMPACTS

The Proposed Action involves developing additional reserves to support ongoing mining operations. The Castle Mountain Mine would not be modified with the exception of the expansion and extension of mining operations. The hours of operation would not be altered, the approved rate of mining would not change.

No increase in the average number of employees is therefore proposed. In addition, no new access roads or extensions of service will be required for this project. Consequently, no increase in the local population is anticipated and no additional demand for housing or associated facilities would occur.

### 4.5 ENERGY CONSUMPTION AND CONSERVATION

Construction and operation of the Proposed Action would result in the consumption of non-renewable energy resources. These resources would primarily include petroleum products, such as diesel fuel and gasoline, and electricity. Fuel consumption by heavy equipment would be the largest single energy requirement. One of the primary opportunities for energy conservation associated with the Proposed Project is the regular, scheduled maintenance of the vehicles and equipment to maximize fuel efficiency. Vehicle and heavy equipment maintenance is performed at the shop located at the mine. The Proposed Action has been designed for operational efficiencies, primarily by minimizing haul length road length to reduce fuel consumption. The Proposed Action would develop the North Overburden Site; haul distances from mine pits would be less than half of that associated with the South Overburden Site. In addition, the Castle Mountain Mine provides an employee transportation program utilizing buses and passenger vans; 98 percent of the employees continue to use this program on a daily basis.



**CHAPTER 5.0**  
**CONSULTATION AND COORDINATION.**

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## 5.0 CONSULTATION AND COORDINATION

### 5.1 PUBLIC PARTICIPATION

The process undertaken for determining the scope of environmental issues to be addressed in this EIS/EIR included public involvement, as required by implementing regulations of NEPA and encouraged by CEQA. Scoping was undertaken to identify the range of actions, alternatives, impacts and mitigation measures associated with the Proposed Action to be analyzed in depth in the EIS/EIR, and to eliminate issues found not to be important. The public scoping process was designed to solicit comments from the general public and from local, state, and federal governmental agencies, and included the following steps:

- BLM Notifications:
  - Notice of Intent (NOI) to complete an EIS on the Proposed Action, published in the Federal Register by the U.S. Environmental Protection Agency (EPA) on July 18, 1995, requesting comments on the issues to be addressed within a 30-day period.
  - A second NOI was published in the Federal Register, at the request of The Wilderness Society, on August 29, 1995, requesting comments on the issues to be addressed within a 30-day period. No comments were received.
  - Approximately 650 "response requested" cards were sent to organizations and individuals according to the BLM's previous mailing list for the "Castle Mountain Project" to update that list.
- Direct mailing of approximately 550 notices for the public scoping meetings for the mine plan amendments were sent to interested respondents.
- County Notifications:
  - Notice of Preparation (NOP) to prepare an EIR on the Proposed Action, published by the County of San Bernardino. The NOP was sent to state agencies, surrounding property owners, and other interested individuals according to the County's mailing list, on July 21, 1995, requesting comments within a 30-day period on the issues to be addressed.
- Joint BLM and County Notifications:
  - Notices of the public scoping meetings, published in four newspapers of local and regional distribution (*San Bernardino Sun*, *Barstow Daily Dispatch*, *Las Vegas Sun*, and *Las Vegas Review Journal*) on July 23, 1995 and July 30, 1995.
  - Two scoping meetings were held, as noticed by the direct mailing letter and the newspaper notices, one in Searchlight, Nevada on August 2, 1995, and the other in Barstow, California, on August 3, 1995. A total of 11 individuals attended the two meetings.

Copies of the above notices and mailings are included in Appendix A. Comment letters

## 5.0 CONSULTATION AND COORDINATION

received and results of the public scoping process are contained in Appendix B.

### Issues of Concern

The scoping process resulted in the following list of potential environmental consequences from the proposed mine plan modifications:

- **Geology:** Mine pit wall stability, overburden stockpile stability
- **Water Resources:** Extended mine life and water use effects on Lanfair Valley aquifer, monitoring of Piute Spring, groundwater protection from mine process activities, consequences of water seepage into the mine pit
- **Vegetation:** Impact to vegetation as a result of expanded area and extended period of operation, impact to sensitive species
- **Wildlife:** Impact to wildlife and habitat as a result of expanded area and extended period of operation, impact to sensitive species as a result of expanded area and extended period of operation
- **Air Quality:** Fugitive dust (PM<sub>10</sub>) from new mining areas and longer haul roads
- **Visual Resources:** Changes to views as a result of mine expansion and extended period of operation
- **Cultural Resources:** Impacts to pre-historic resources, impacts to historic resources of the Hart townsite
- **Land Use:** Impact of extended period of operation on other surrounding uses, relationship to Mojave National Preserve
- **Hazards:** Potential effects of continued use of reagents for extended period of operation

San Bernardino County sent out public notices to nearby property owners concerning the project on August 4, 1995, requesting comments by August 18, 1995.

## 5.2 LIST OF CONTACTS

During the preparation of the EIS/EIR the BLM and the County communicated with and received input through the NOP and scoping process from various federal, state and local agencies, private organizations, and individuals. The following sections list these contacts.

### 5.2.1 Federal Agencies

U.S. Environmental Protection Agency

U.S. Fish and Wildlife Service

Mojave National Preserve

### 5.2.2 State Agencies/Universities

California Department of Conservation,  
Office of Mine Reclamation

San Bernardino County Museum,  
Archaeological Information Center

### 5.2.3 Local Agencies

County of San Bernardino, DEHS/Water -  
Wastewater

County of San Bernardino, Environmental  
Public Works Agency



County of San Bernardino, Fire Department

Mojave Desert Air Quality Management  
District

#### **5.2.4 Private Organizations and Companies**

California Association of Four Wheel Drive  
Clubs, Mike Ahrens

Geneva Minerals, Doris W. Barnes

Geneva Minerals, T. D. Barnes

Gold-Jer Mining, Inc., Craig Stephens

Gold-Jer Mining, Inc., Dick Drake

Golden Quail, Colin Redden

Hickman, Sue

Laser, Inc.

Sierra Club, Peter Burke

US Borax, Joe Siefke

### **5.3 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THIS DOCUMENT ARE SENT**

A list of agencies, organizations, and  
persons to whom copies of this document  
have been sent is included in Appendix B.

### **5.4 EIS/EIR PREPARATION STAFF**

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#### **Archaeological Research Unit**

**Subconsultant for Cultural Resources**

University of California at Riverside

Riverside, California 92521

Matt Hall, Director and Principal  
Investigator





## **CHAPTER 6.0**

# **REFERENCES AND RESOURCES**

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**CHAPTER 7.0**  
**GLOSSARY AND ACRONYMS**

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## 7.0 GLOSSARY AND ACRONYMS

### 7.1 ACRONYMS

ACHP	Advisory Council on Historic Preservation	MMPA	Mining and Mineral Policy Act
ANFO	ammonium nitrate and fuel oil	MPE	maximum probable earthquake
Applicant	Viceroy Gold Corporation	MRZ	Mineral Resource Zone
AQAP	Air Quality Attainment Plan	MSHA	Mine Safety and Health Administration
AUM	Animal Units per Month	MTY	million tons per year
BLM	US Bureau of Land Management	NAAQS	National Ambient Air Quality Standards
BP	Before Present	NEPA	National Environmental Protection Act
CAAQS	California Ambient Air Quality Standards	NHPA	National Historic Preservation Act
CARB	California Air Resources Board	NRHP	National Register of Historic Places
CDCA	California Desert Conservation Area	NOI	Notice of Intent
CDPA	California Desert Protection Act	NOP	Notice of Preparation
CEQA	California Environmental Quality Act	NPPA	Native Plant Protection Act
CESA	California Endangered Species Act	NPS	U.S. National Park Service
CFR	Code of Federal Regulations, 1987	NRHP	National Register of Historic Places
CNDDB	California Natural Diversity Data Base	OPT	ounces per ton
CNPS	California Native Plant Society	OSHA	Occupational Safety and Health Administration
County	County of San Bernardino, unless otherwise designated	PHGA	peak horizontal ground acceleration
CRHR	California Register of Historical Resources	PM <sub>10</sub>	Particulate Matter less than 10 microns, aerodynamic diameter
CUP	Conditional Use Permit	PMP	probable maximum precipitation
DEHS	County of San Bernardino Department of Environmental Health Services	ppm	parts per million
DFG	California Department of Fish and Game	PVC	polyvinyl chloride
DTM	Digital Terrain Model	ROD	Record of Decision
DWMA	Desert Wildlife Management Area	RWQCB	Regional Water Quality Control Board
DWR	California Department of Water Resources	SEDAB	Southeast Desert Air Basin
EIS/EIR	Environmental Impact Statement/Environmental Impact Report	SBB&M	San Bernardino Baseline and Meridian
EPA	U.S. Environmental Protection Agency	SHPO	State Historic Preservation Officer
FESA	Federal Endangered Species Act	SMARA	California Surface Mining and Reclamation Act
FLPMA	Federal Land Policy Management Act	SPCCP	Spill Prevention, Control, and Countermeasures Plan
FWS	U.S. Fish and Wildlife Service	STLC	Soluble Threshold Limit Concentration
gpm	gallons per minute	TPY	tons per year
HCN	hydrogen cyanide	USDI	United States Department of the Interior
HDPE	High Density Polyethylene	UPA	Unusual Plant Assemblage
ICC	Interstate Commerce Commission	USGS	U.S. Geological Survey
LCRS	Leachate Collection and Recovery System	Viceroy	Viceroy Gold Corporation
MCE	maximum credible earthquake	VRM	Visual Resource Management
MDAB	Mojave Desert Air Basin	WSA	Wilderness Study Area
MDAQMD	Mojave Desert Air Quality Management District		

## 7.2 GLOSSARY

**acid mine drainage** Drainage with a pH of 2.0 to 4.5 from mines and mine wastes that is the result of oxidation of sulfides exposed during mining.

**acre-feet** The volume of liquid or solid required to cover 1 acre to a depth of 1 foot, or 43,560 cubic feet; measure for volumes of water, reservoir rock, etc.

**activated carbon** A mostly pure carbon product that has been treated in a kiln to remove impurities and maximize its adsorption capacity.

**active fault** Fault with seismic activity recent enough so as to have displaced Holocene materials (up to 10,000 years old)

**adit** A surface opening to an underground mine.

**adsorb** A chemical process where a molecule attaches loosely to the surface of another phase without becoming permanently incorporated into that phase.

**agglomeration** The process by which fine particles of crushed rock are bound to larger pieces of crushed rock so that fine particles within the heap leach pad do not inhibit percolation of leach solutions.

**allotment** A unit of land suitable and available for livestock grazing that is managed as one grazing unit.

**alluvial** Pertaining to material or processes associated with transportation or deposition of soil and rock by flowing water (e.g., streams and rivers).

**alluvium** A general term for geologic materials deposited by running water (e.g., streams, rivers). The term applies to deposits of recent time that have not been consolidated and cemented into rock.

**ambient** The environment as it exists at the point of measurement and against which changes or impacts are measured.

**ancillary facilities** Support structures and equipment.

**ANFO** A slurry of ammonium nitrate and fuel oil, used as an explosive.

**Animal Unit Months** Grazing of a cow/calf pair for one (1) month.

**aquifer** A body of rock that is sufficiently permeable to conduct groundwater and to yield economically significant quantities of water to wells and springs.

**artifact** Any object showing human workmanship or modification, especially from a prehistoric or historic culture.

**Authority to Construct** Written permit which must be obtained from the Air Quality Management District prior to construction, alteration, or replacement of any article, machine, or equipment which may emit air contaminants or affect emission of those contaminants.

**bajada** A sloping ground surface comprised of a series of merged alluvial fans.

**barren solution** Non gold-bearing cyanide solution.

**beneficiation** The preparation and treatment of ore for recovery of mineral commodities. Beneficiation includes, but is not limited to, crushing, sizing, drying, and leaching.

**berm** An elongate earthen structure which acts as a barrier; e.g., to make it difficult for a vehicle to cross, or to redirect the flow of water.

**California Endangered Species Act (CESA)**  
Legislation enacted in 1984 to protect floral and faunal species by listing them as "rare," "threatened," "endangered," or "candidate," and providing a consultation process for the determination and resolution of potential adverse impact to the species.

**California Environmental Quality Act (CEQA)**  
Legislation enacted in 1970, as amended, to protect the quality of the environment for the people of California through requiring public agencies and decision makers to document and



consider the environmental consequences of their actions.

**carbon column** A container in which the carbon adsorption process takes place. Typically the column will be a cylindrical vessel 5 to 6 feet in diameter and up to 15 feet high, filled with activated carbon. The gold-bearing solution is introduced into the vessel, gold in solution adsorbs onto the activated carbon, and the barren solution exits the vessel.

**carbon reactivation** A process in which used carbon is heated to high temperature to restore its adsorption capability.

**cone of depression** The depression produced in a water table or potentiometric surface by the withdrawal of water due to pumping.

**contrast** The effect of a striking difference in form, line, color, or texture of the landscape features within an area being viewed.

**cumulative impacts** Two or more individual effects which, when considered together, compound or increase the impact.

**cyanide** A chemical compound comprised of calcium, potassium or sodium, carbon, and nitrogen. Cyanide is water soluble and is used in ore processing solutions to extract gold from crushed rock.

**desorb** The reverse of the adsorption process.

**discretionary actions** For the purpose of CEQA, these are actions or approvals by governmental agencies or boards that require the exercise of judgment or deliberation when making a decision to approve, deny, or approve with conditions a proposed project.

**doré** A French term used to describe precious metal bars comprised of greater than 15 percent silver.

**drawdown** The lowering of the water table in a well as a result of withdrawal; the reduction in head at a point caused by the withdrawal of water from an aquifer.

**drip irrigation** A process of distributing cyanide solution across the top of the leach pile in order that gold may be leached from the ore. The process uses plastic tubing approximately 1/2 inch in diameter. A small opening about every 18 to 36 inches along the length of the tubing allows a small quantity of processing solution to drip out of the tube.

**dust palliative** A compound used to reduce fugitive dust. Dust palliatives include water, water/surfactant mixtures, emulsion compounds, etc.

**end-dumping** The process of dumping material from the back of a dump truck. Overburden sites are constructed by backing a dump truck up on the top surface of an overburden site to the edge of the pile, and end-dumping the overburden over the side of the pile.

**effects** Effect and impact are synonymous as used in this report. Direct or primary impacts are those caused by the project and occur at the same time and place. Indirect, or secondary, effects are those which result from the project and occur later in time or farther removed in distance or time, but are still reasonably foreseeable.

**Endangered Species Act (ESA)** Federal legislation enacted in 1973, as amended, that extends legal protection to plants and animals listed as "threatened" or "endangered" and includes consultation with FWS.

**environment** The physical conditions which exist within the area which will be affected by a proposed project or alternative, including but not limited to land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The environment includes both natural and man-made conditions.

**Environmental Impact Report (EIR)** A detailed report prepared under CEQA describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects. An EIR is prepared for use by the public, public agencies and agency decision makers to weigh the environmental consequences of a proposed action.

## 7.0 GLOSSARY AND ACRONYMS

**Environmental Impact Statement (EIS)** An analytical document prepared under NEPA that portrays potential impacts to the human environment of a particular course of action and its possible alternatives. An EIS is prepared for use by the public, public agencies, and agency decision makers to weigh the environmental consequences of a proposed action.

**ephemeral stream** A stream or portion of a stream that flows briefly in direct response to precipitation in the immediate vicinity and whose channel is at all times above the water table. (Such flow is usually of short duration.)

**erosion** The wearing away of soil and rock by weathering, mass wasting, and the action of streams, glaciers, waves, wind, and underground water.

**evapotranspiration** The process by which water is returned to the air through direct evaporation or by transpiration of vegetation, with no attempt being made to distinguish between either process.

**fault** A surface or zone along which there has been displacement of the geologic materials on either side relative to one another as a result of seismic activity.

**freeboard** The height of containment above the surface of contained liquid.

**fugitive dust** Dust particles suspended randomly in the air from road travel, excavation, and rock loading operations.

**g** The acceleration of gravity (32.2 ft/sec<sup>2</sup>).

**game species** Animals commonly hunted for food or sport.

**geonet** A coarse plastic net used as a fluid drainage layer in engineering systems.

**geotextile** A fabric-like material designed for various uses in engineered earth structures. Common uses include wrapping or covering of materials to be buried to prevent their physical damage, incorporation into fills to spread load distribution, and use as a filter medium to capture fine particles. The geotextile cushions and protects the HDPE.

**groundwater** Water found beneath the land surface, in the zone of saturation below the water table.

**growth media** Geologic and organic materials, including soils, that are suitable for use in growing plants.

**habitat** The place where an animal or plant normally lives, often characterized by a dominant plant and co-dominant form, such as creosote bush habitat.

**haul road** A road used by large (50- to 100-ton capacity) trucks to haul ore and overburden from the open pit to other locations.

**hazardous material** Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment. (California Health and Safety Code, §25501)

**heap** A pile of crushed ore underlain by a liner system engineered to collect the leach solutions. Care is taken during the placement of the crushed ore so as to avoid compaction, in order that the leach solutions can flow freely through the ore to extract the gold.

**heap leach** The process of recovering gold from low grade ores by leaching ore that has been mined and placed on a specially prepared pad. A chemical solution is applied through low volume emitters, and the metal-bearing leachate solution percolates and is collected.

**heavy metals** A group of elements, including copper, lead, mercury, molybdenum, nickel, cobalt, chromium, iron, silver, etc., that may be acquired by organisms in trace amounts that are toxic in higher concentrations.

**Holocene** The epoch of the Quaternary period of geologic time from 10,000 years ago up to the present.



**hydraulic conductivity** The capacity of a rock to transmit water. It is expressed as the volume of water at the existing kinematic viscosity that will move in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

**infiltration** Downward movement of water through the soil surface into the ground.

**infrastructure** The basic framework or underlying foundation of a community or project, including road networks, electric and gas distribution, water and sanitation services, and facilities.

**Initial Study** A preliminary analysis prepared by the lead agency to determine whether an EIR or a Negative Declaration must be prepared or to identify the significant environmental effects to be analyzed in an EIR.

**intermittent stream** A stream that flows only part of the time or during part of the year.

**irreversible** Applies primarily to the use of nonrenewable resources, such as minerals, cultural resources, wetlands, or to those factors that are renewable only over long time spans, such as soil productivity. Irreversible also includes loss of future options.

**jurisdictional wetland** A wetland area identified and delineated by specific technical criteria, field indicators, and other information for purposes of public agency jurisdiction. The public agencies that administer jurisdictional wetlands are the U.S. Army Corps of Engineers (ACE), the U.S. Environmental Protection Agency (EPA), The U.S. Fish and Wildlife Service (FWS), and the USDA Natural Resource Conservation Service (NRCS).

**leachate collection and recovery system (LCRS)** A term used to describe the assembly of components installed for the purpose of capturing fluids to minimize or eliminate the hydraulic head over a liner system.

**lead agency** The public agency which has the principal responsibility for carrying out or approving a project.

**lime** A calcium oxide compound that is used for pH control in the leaching process.

**magazine** A storage room for explosives. Magazines are built to specifications set by the MSHA and are usually located in a secure but remote area of the project site.

**makeup water** Water used as a supplement for milling or processing ore to make up for water lost to evaporation.

**mine pit** Area from which ore and overburden are removed.

**mitigation** A method or procedures which may: (1) avoid an impact altogether by not taking a certain action or parts of an action; (2) minimize impacts by limiting the degree or magnitude of the action and its implementation; (3) rectify the impact by repairing, rehabilitating, or restoring the impacted environment; (4) reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action; and (5) compensate for the impact by replacing or providing substitute resources or environments.

**mitigate/mitigation** To cause to become less severe or harmful; actions to avoid, minimize, rectify, reduce or eliminate, and compensate for impacts to environmental resources.

**monitor** To systematically and repeatedly watch, observe, or measure environmental conditions in order to track changes.

**National Environmental Policy Act (NEPA)** Legislation enacted in 1969, as amended, that requires federal agencies to include in their decision-making process: (1) appropriate consideration of all environmental effects; (2) procedures to avoid or minimize adverse effects; and (3) restore and enhance environmental quality as much as possible.

**National Register of Historic Places (NRHP)** A list, maintained by the National Park Service, of areas that have been designated as being of historical significance.

## 7.0 GLOSSARY AND ACRONYMS

**native species** Plants that originated in the area in which they are found, i.e., they naturally occur in that area.

**Notice of Preparation (NOP)** A brief notice sent by the public agency with principal responsibility for carrying out or approving a project to notify other agencies that an EIR is being prepared under CEQA.

**Notice of Intent** Similar to the Notice of Preparation, is used to notify other agencies and the public that an EIS is being prepared under NEPA.

**ore** Rock that can be mined for extraction of a mineral commonly under conditions that allow a profit to be made.

**overburden** Rock that contains insufficient quantities of a mineral to warrant processing, but which must be mined in order to gain access to ore.

**ozone (O<sub>3</sub>)** An end product of complex reactions between ROG and (or non-methane hydrocarbons) and NO<sub>x</sub> in the presence of ultraviolet radiation.

**particulate(s)** Minute, separate particles, such as dust or other air pollutants.

**patent** A document conveying title to land from the U.S. Government to private ownership.

**patented claims** Mining claims for which the United States government has conveyed the fee simple interest in the surface and minerals into private ownership.

**peak flow** The greatest flow attained during melting of winter snowpack or during a large precipitation event.

**permeable** The property or capacity of a porous rock, sediment, or soil to transmit a liquid.

**permeability** A measure of the relative ease with which a porous medium can transmit a liquid under a potential gradient.

**pH** The measure of the acidity or basicity of a solution.

**plan of operations** As required by 43 Code of Federal Regulations 3809: Operators submit plans of operation outlines to the Bureau of Land Management that include the name and address of the operator; location of the proposed area of operation; and information sufficient to describe the type of operation proposed, the type of roads, the means of transportation to be used, the period when the proposal will take place, and measures to be taken to meet the requirements for environmental protection.

**potentiometric surface** A surface that represents the total head in an aquifer; that is, it represents the height above a datum plane at which the water level stands in tightly cased wells that penetrate the aquifer.

**pregnant solution** A gold-bearing, water-based sodium, potassium, or calcium cyanide fluid which contains sufficient quantities of gold that it can be sent to the processing plant to recover the gold.

**prevention of significant deterioration (PSD)** A term used to describe an air quality permitting process that is triggered by any project that has the potential to emit certain pollutants above levels prescribed by law.

**process facilities** As used in this document, generally means the stationary equipment and facilities used to prepare the ore for leaching and extracting gold, and recovery of dissolved gold from solution.

**protore** Material which does not contain sufficient gold to be economically processed using present technology, but which, given favorable changes to the price of gold or processing technology, could be economically recoverable in the future. Such material is usually segregated into a stockpile so that it will be readily accessible in the future.

**pseudostatic analysis** Static analysis of slope stability that incorporates a simulated horizontal force equal to the horizontal acceleration of the design earthquake times the mass of the potential sliding material.

**pseudostatic factor of safety** The ratio of forces contributing to slope stability (e.g., intergranular friction and cohesion) versus forces working against slope stability (e.g., gravity, seismic



acceleration) for a simulated seismic load. A pseudostatic factor of safety equal to one indicates that these forces are equal and slope movement may occur.

**public land** Any land and interest in land owned by the United States within the several states, without regard to how the United States acquired ownership, except: (1) lands located on the Outer Continental Shelf; and (2) lands held for the benefit of Indians, Aleuts, or Eskimos.

**Quaternary** The period of the Cenozoic Era of geologic time between 1.8 million years ago and the present. The Quaternary period includes the Pleistocene and Holocene epochs.

**rare species** A species which, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.

**reactivation kiln** The equipment used in gold processing to heat the carbon to restore its capability to adsorb gold from cyanide solution.

**recharge** Process by which water infiltrates and is added to an aquifer, either directly or indirectly by way of another rock formation. This term can also be used in reference to the water itself.

**responsible agency** The organization that has the legal duty to ensure that a project complies with the appropriate rules and regulations.

**right-of-way** The right to pass over property owned by another. The strip of land over which facilities such as roadways, railroads, or power lines are built.

**riparian** Situated on or pertaining to the bank of a river, stream, or other body of water. Riparian is normally used to refer to plants of all types that grow along streams, rivers, or at spring and seep sites.

**ROG** Reactive organic gases, chemicals that are the precursors to the formation of ozone.

**run-of-mine** Refers to ore that has been broken by blasting, before it has been crushed and screened.

**saturated zone** Zone in which all the connected interstices or voids in rock or soil are filled with water under pressure equal to, or greater than, atmospheric pressure. The water table is commonly considered to be at the top of the zone of saturation.

**sediment** Material suspended in or settling to the bottom of a liquid. Sediment input comes from natural sources, such as soil erosion, rock weathering, construction activities, or anthropogenic sources, such as forest or agricultural practices.

**seismicity** Oscillation of the ground resulting from shifting of the earth's crust.

**sensitive species** Generic term for any plant or animal species which is recognized by the government or conservation group as being depleted, rare, threatened, or endangered.

**stripping vessel** The vessel in which gold is removed (stripped) from the activated carbon. The stripping chemical is a concentrated solution of sodium cyanide and caustic soda. After the carbon has been stripped free of the adsorbed gold, it is sent to the reactivation kiln to regenerate its capacity to adsorb gold.

**surfactant** One of a number of chemicals which, when added in minute quantities to water, reduces the surface tension of the water, thereby improving its efficiency as a wetting agency.

**symbiont** Either of two organisms living together in symbiosis.

**transmissivity** Ability of a rock to transmit water under hydraulic head.

**unsaturated zone** Zone in which the connected interstices or voids in a permeable rock are not filled with water and in which there can be movement of air. Generally, the zone between the land surface and the water table, but a zone of aeration can exist below an artesian aquifer and below a perched body of water.

**visual resource** The composite of basic terrain, geologic features, water features, vegetation

## 7.0 GLOSSARY AND ACRONYMS

- patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for viewers.

**visual resource management classes** A classification of landscapes according to the kinds of structures and changes that are acceptable to meet established visual goals (Bureau of Land Management designation).

**waste rock** Rock which contains either no gold or gold in quantities that cannot be economically extracted. Because such rock either lies on top of ore or is mixed in with the ore, waste rock must be mined in advance of or at the same time as the ore is mined.

**water table** The level in the saturated zone at which the pressure is equal to the atmospheric pressure.

**watershed** The geographic region from which water drains into a particular stream, river, or body of water. A watershed includes hills, lowlands, and the body of water into which the land drains. Watershed boundaries are defined by the ridges or divides separating them.



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## APPENDICES

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**APPENDIX A**  
**NOTICE OF INTENT AND**  
**NOTICE OF PREPARATION**

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## GOVERNOR'S OFFICE OF PLANNING AND RESEARCH

1400 TENTH STREET  
SACRAMENTO, CA 95814

DATE: August 15, 1995  
TO: Reviewing Agencies  
RE: CASTLE MINE MOUNTAIN  
SCH# 95081031

Attached for your comment is the Notice of Preparation for the CASTLE MINE MOUNTAIN draft Environmental Impact Report (EIR).

Responsible agencies must transmit their concerns and comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

SAN BERNARDINO COUNTY  
385 NORTH ARROWHEAD  
SAN BERNARDINO, CA 92415-0182

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call at (916) 445-0613.

Sincerely,

ANTERO A. RIVASPLATA  
Chief, State Clearinghouse

Attachments

cc: Lead Agency

# NOP Distribution List

S = sent by lead agency

X = sent by SCH

## Resources Agency

- ☒ Nadell Gayou  
Resources Agency  
1020 Ninth Street, Third Floor  
Sacramento, CA 95814  
916/327-1722
- ☐ Judy Carpenter  
Dept. of Boating & Waterways  
1629 S Street  
Sacramento, CA 95814  
916/445-6281
- ☐ Gary L. Holloway  
California Coastal Commission  
45 Fremont Street, Suite 1970  
San Francisco, CA 94105-2219  
415/904-5200
- ☐ Reed Holderman  
State Coastal Conservancy  
1330 Broadway, Suite 1100  
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Reclamation Board  
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- ☐ Steve McAdam  
S.F. Bay Conservation & Dev't. Comm.  
30 Van Ness Avenue, Room 2011  
San Francisco, CA 94102  
415/557-3686
- ☒ Nadell Gayou  
Department of Water Resources  
1020 Ninth Street, Third Floor  
Sacramento, CA 95814  
916/327-1722
- Health & Welfare**
- ☐ Kim Dinh  
Dept. of Health  
601 N. 7th Street, P.O. Box 942732  
Sacramento, CA 94234-7320  
916/323-6111

## Fish and Game - Regional Offices

- ☐ Richard L. Elliott, Regional Manager  
Department of Fish and Game  
601 Locust  
Redding, CA 96001  
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- ☐ Ryan Broddrick, Regional Manager  
Department of Fish & Game  
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707/944-5518
- ☐ G. Nokes, Regional Manager  
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Fresno, CA 93710  
209/222-3761 (8-421)
- ☒ Fred A. Worthley, Jr., Reg. Manager  
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330 Golden Shore, Suite 50  
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310/590-5132

## Independent Commissions/Agencies

- ☐ Lorri Gervais  
California Energy Commission  
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916/654-3944
- ☐ Native American Heritage Comm.  
915 Capitol Mall, Room 364  
Sacramento, CA 95814  
916/653-4082
- ☐ Douglas Long  
Public Utilities Commission  
505 Van Ness Avenue  
San Francisco, CA 94102  
415/703-2011
- ☒ Betty Eubanks  
State Lands Commission  
1807 - 13th Street  
Sacramento, CA 95814  
916/574-1880
- ☐ Gerald R. Zimmerman  
Colorado River Board  
770 Fairmont Avenue, Suite 100  
Glendale, CA 91203-1035
- ☐ Rick Angelocci  
Tahoe Regional Planning  
P.O. Box 1038  
Zephyr Cove, NV 89448  
702/588-4547

- ☐ Thomas Ottoman  
Office of Emergency Services  
P.O. Box 29998  
San Francisco, CA 94129  
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## Department of Transportation District Contacts

- ☐ Dave Carstensen  
Caltrans, District 1  
1656 Union Street  
Eureka, CA 95501  
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Caltrans, District 2  
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Redding, CA 96049-4040  
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- ☐ Jody Lonergan  
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Caltrans, District 7  
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Los Angeles, CA 90012  
213/897-1338 or 897-1344
- ☒ Harvey Sawyer  
Caltrans, District 8  
P.O. Box 231  
San Bernardino, CA 92402  
909/383-4808 (8-670)
- ☐ Lisa Flores  
Caltrans, District 9  
500 South Main Street  
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619/872-5203
- ☐ Mitchell Baker II  
Caltrans, District 10  
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209/948-3803
- ☐ Mike Owen  
Caltrans, District 11  
P.O. Box 85406  
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- ☐ Alleen Kennedy  
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2501 Pullman St.  
Santa Ana, CA 92705  
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## Business, Transportation, & Housing

- ☐ Sandy Hesnard  
Caltrans - Division of Aeronautics  
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916/324-1833
- ☐ Tom Milcone  
California Highway Patrol  
Office of Special Projects  
Planning and Analysis Division  
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Sacramento, CA 94298-0001  
916/657-7222
- ☐ Ron Helgeson  
Caltrans - Planning  
P.O. Box 942874  
Sacramento, CA 94274-0001  
916/445-5570

## State and Consumer Services

- ☐ Robert Sleppy  
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400 R Street, Suite 5100  
Sacramento, CA 95814  
916/324-0214
- ☐ Office of Local Assistance  
501 J Street, Suite 400  
Sacramento, CA 95814  
916/445-3160

## California Environmental Protection Agency

- ☐ Barbara Fry  
Air Resources Board  
2020 L Street  
Sacramento, CA 95815  
916/322-8267
- ☐ Mark deBle  
Calif. Waste Management Board  
8800 Cal Center Drive  
Sacramento, CA 95826  
916/255-2367
- ☐ Wayne Hubbard  
State Water Resources Control Board  
Division of Clean Water Programs  
P.O. Box 944212  
Sacramento, CA 94244-2120  
916/227-4308
- ☐ Phil Zentner  
State Water Resources Control Board  
Division of Water Quality  
P.O. Box 944213  
Sacramento, CA 94244-2130  
916/657-0912
- ☐ Mike Falkenstein  
State Water Resources Control Board  
Division of Water Rights  
901 P Street, 3rd Floor  
Sacramento, CA 95814  
916/657-1377 (8-437)
- ☒ Dept. of Toxic Substances Control  
CEQA Tracking Center  
400 P Street, Fourth Floor  
P.O. Box 806  
Sacramento, CA 95812-0806  
916/324-3119

SCH# 95081021

## Regional Water Quality Control Board

- ☐ NORTH COAST REGION (1).  
5550 Skyline Blvd., Suite A  
Santa Rosa, CA 95403  
707/576-2220 (8-590)
- ☐ SAN FRANCISCO BAY REGION (2)  
2101 Webster, Suite 500  
Oakland, CA 94612  
510/286-1255
- ☐ CENTRAL COAST REGION (3)  
81 Higuera Street, Suite 200  
San Luis Obispo, CA 93401-5427  
805/549-3147 (8-629)
- ☐ LOS ANGELES REGION (4)  
101 Centre Plaza Drive  
Monterey Park, CA 91754-2156  
213/266-7556
- ☐ CENTRAL VALLEY REGION  
3443 Routier Road, Suite A  
Sacramento, CA 95827-3098  
916/255-3000
- ☐ Fresno Branch Office  
3614 East Ashlan Avenue  
Fresno, CA 93726  
209/445-5116 (8-421)
- ☐ Redding Branch Office  
415 Knollcrest Drive  
Redding, CA 96002  
916/224-4845 (ATS 441)
- ☐ LAHONTAN REGION (6)  
2092 Lake Tahoe Boulevard  
South Lake Tahoe, CA 96150  
916/542-5400
- ☐ Victorville Branch Office  
15428 Civic Drive, Suite 100  
Victorville, CA 92392-2359  
619/241-6583
- ☐ COLORADO RIVER BASIN  
REGION (7)  
73720 Fred Waring Drive, #100  
Palm Desert, CA 92260-2564  
619/346-7491
- ☒ SANTA ANA REGION (8)  
2010 Iowa Avenue, Suite 100  
Riverside, CA 92507  
714/782-4130 (8-632)
- ☐ SAN DIEGO REGION (9)  
9771 Clairemont Mesa Blvd., Suite B  
San Diego, CA 92124-1331  
619/265-5114 (8-636)

OTHER: \_\_\_\_\_

OTHER: \_\_\_\_\_



# COUNTY FIRE DEPARTMENT

West Fifth Street • San Bernardino, CA 92415-0450 • (909) 387-5974  
Fax (909) 387-5542



COUNTY OF SAN BERNARDINO

RICHARD W. SEWELL  
Fire Chief  
County Fire Warden

DATE: SEPTEMBER 15, 1995

VICEROY GOLD CORP.  
WALKING BOX RANCH RD.  
SEARCHLIGHT, CA. 89046



RE: SAMR 95-0006/DN1145-581N  
LOCATION: HART MINE RD., SOUTHSIDE APPROX. 5 MILES EAST OF  
LANFAIR RD./IVANPAH  
PROJECT TYPE: TENANT IMPROVEMENT

Dear Applicant:

With respect to the conditions of approval regarding the above referenced project, the San Bernardino County Fire Agency recommends the following fire protection measures to be provided in accordance with applicable local ordinances, codes, and/or recognized fire protection standards.

The Fire Agency is required to set a minimum fire flow for the addition to, or the construction of buildings using the San Bernardino County "Guide for Determining Required Fire Flow". This formula has established the required fire flow to be 750 GPM for a 2-hour duration at 20 PSI residual operating pressure. The water system and hydrants shall be in operating condition before any combustible material is placed on the job site.

The following pages of this document set out the FIRE CONDITIONS and GUIDELINES which are applied to your project.

FIRE CONDITIONS:

F2a: In areas without water serving utilities, the fire protection water system shall be based on NFPA 1231 and shall be operational prior to framing. All NFPA 1231 systems shall provide a minimum of 5,000 gallons with gravity flow or an approved NFPA 13, 13R or 13D fire sprinkler system.

F3: The above referenced project is protected by the San Bernardino County Fire Agency. Prior to any construction occurring on any parcel, the applicant shall contact the Fire Agency for verification of current fire protection requirements. All new construction shall comply with the existing Uniform Fire Code requirements and all applicable codes, ordinances or standards of the Fire Agency.

All questions regarding the meaning of the conditions shall be referred to the Fire Marshal.

Sincerely,

Doug Crawford/Am  
Doug Crawford, Fire Inspector




# INTEROFFICE MEMO



DATE: August 25, 1995

PHONE: 4666  
MAIL CODE: 0160

FROM: SCOTT R. ROSE, REHS   
DEHS/Water-Wastewater-Land Use Program

TO: ANDREW RUSH, Planner  
Planning Department

---

**SUBJECT: VICEROY'S CUP - EXPANSION AND EXTENSION OF TIME**

---

Environmental Health Services has reviewed the proposed Viceroy Goldmine expansion and extension of time and finds there are no major concerns.

Environmental Health Services would like to have submission of a log of incident reports and complaints received since the beginning of operation. All expansions that require more quantities of water or hazardous materials should be revised in all water supply plans or business plans. No comments regarding extending the time for mining.

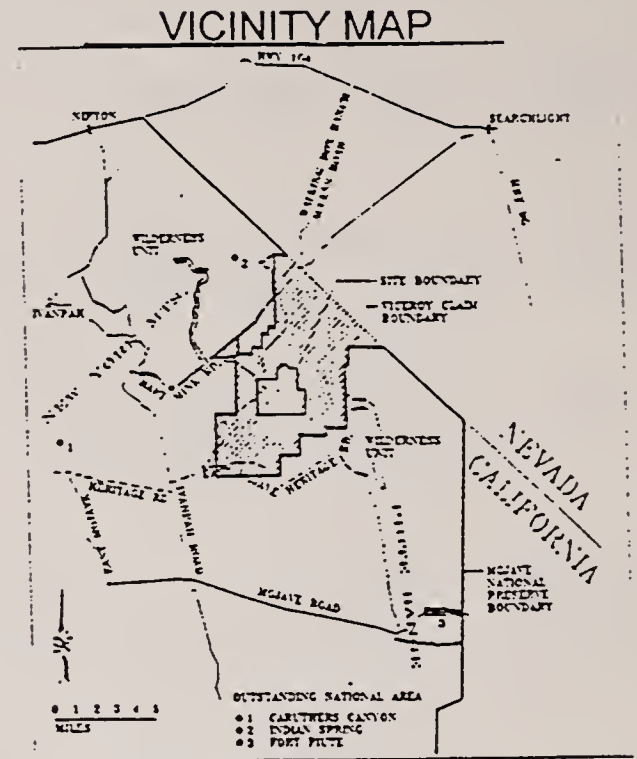
SRR:mo

SPATIAL DISTRICTS/ LDA :

BILL SMILLIE

Acceptance Date: AUGUST 4, 1995

DATES: 745DSN95009355SMC01/09355MG1  
COMMUNITY: IVANPAH/SI  
FILE/INDX: SAMR/95-0006/DN1145-581N  
APPLICANT: VICEROY GOLD CORP.  
PROPOSAL: MINING CONDITIONAL USE PERMIT TO EXPAND  
AN EXISTING GOLD MINING OPERATION ON  
265 ACRES OF PATENTED MINING CLAIMS  
WITH A RECLAMATION PLAN ON 2,885 ACRES  
OF BOTH FEDERAL LANDS ADMINISTERED BY  
THE BLM AND PATENTED LAND.  
LOCATION: HART MINE RD., SOUTHSIDE APPROX. 5 MILES  
EAST OF LANFAIR RD.  
REP('S): MICHAEL ATTAWAY/CHRIS MITCHELL



**ATTENTION PROPERTY OWNERS AND REVIEWING AGENCIES:**

The development proposal listed above has been filed with the County Planning Department. You are invited to comment because your property is near the proposed project.

Your comments must be received by this department no later than AUGUST 18, 1995. Comments received after this date might not be considered in the decision. Please refer to this project by the applicant's name and FILE/INDX number indicated above. If you have no comment, no reply is necessary.

**If you want to be notified of the project decision**, print your name clearly and legibly on this form and mail it to the address below along with a self-addressed, stamped envelope. All decisions are subject to an appeal period of ten (10) calendar days after an action is taken.

**COMMENTS:**

NOT IN OUR JURISDICTION.

Pamela W. Hickson

**SIGNATURE**

Planning Department - 1st District

385 N. ARROWHEAD AVE, SAN BERNARDINO, CA 92415-0182

09-11-95

DATE \_\_\_\_\_

SPECIAL DISTRICTS DEPARTMENT

AGENCY

**Phone (909) 387-4099**

IF YOU CHALLENGE ANY DECISION REGARDING THE ABOVE PROPOSAL IN COURT, YOU MAY BE LIMITED TO RAISING ONLY THOSE ISSUES YOU OR SOMEONE ELSE RAISED IN WRITTEN CORRESPONDENCE DELIVERED TO THE PLANNING DEPARTMENT AT, OR PRIOR TO, THE TIME IT MAKES ITS DECISION ON THE PROPOSAL OR, IF A PUBLIC HEARING IS HELD ON THE PROPOSAL, YOU OR SOMEONE ELSE MUST HAVE RAISED THOSE ISSUES AT THE PUBLIC HEARING OR IN WRITTEN CORRESPONDENCE DELIVERED TO THE HEARING BODY AT, OR PRIOR TO, THE HEARING.

DUE TO TIME CONSTRAINTS AND THE NUMBER OF PERSONS WISHING TO GIVE ORAL TESTIMONY, TIME RESTRICTIONS MAY BE PLACED ON ORAL TESTIMONY AT ANY PUBLIC HEARING ABOUT THIS PROPOSAL. YOU MAY WISH TO MAKE YOUR COMMENTS IN WRITING TO ASSURE THAT YOU ARE ABLE TO EXPRESS YOURSELF ADEQUATELY.



## DEPARTMENT OF CONSERVATION

DIVISION OF ADMINISTRATION  
DIVISION OF MINES AND GEOLOGY  
DIVISION OF OIL AND GAS  
DIVISION OF RECYCLING



801 K Street  
SACRAMENTO, CA 95814-3528  
Phone (916) 445-8733  
FAX (916) 324-0948

September 6, 1995

Mr. Andrew J. Rush  
Senior Associate Planner  
San Bernardino County Planning Department  
385 N. Arrowhead, 3rd Floor  
San Bernardino, California 92415-0182

Re: Castle Mountain Mine Reclamation Plan Amendment Notice of Preparation  
**SCH# 95081031**

Dear Mr. Rush:

The Department of Conservation's Office of Mine Reclamation (OMR) has reviewed the Notice of Preparation (NOP) for the Castle Mountain Mine Reclamation Plan Amendment. The amended reclamation plan satisfies the majority of the requirements of the Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Section 2710 et seq.) and the State Mining and Geology Board regulations for surface mining and reclamation practice (California Code of Regulations (CCR) Title 14, Chapter 8, Article 1, Section 3500 et seq.; Article 9, Section 3700 et seq.). We recommend that the reclamation plan be supplemented to address the following items:

1. The NOP contains an aerial photograph of the existing mining operation. We recommend that the proposed expansion be delineated on this photograph. Although not a requirement of SMARA, an overlay for the expanded project would facilitate easier review of the project.
2. The amendment proposes to change the configuration of the open pits and heap leach pad. Based on a telephone conversation with Neal Krull of the California Regional Water Control Board (RWQCB), stability of the heap leach pad, as proposed in the amendment, has been analyzed and approved by the RWQCB. However, it is not clear in the information provided if a stability analysis has been conducted to address the proposed changes in the open pits. Slope stability analysis should be provided in the amended reclamation plan to demonstrate long-term stability of the new pit configurations, as required by SMARA Section 3502(b)(3).
3. Chapter 3 of the reclamation plan discusses reclamation assurance and provides reclamation costs through 1995. We recommend that financial assurance calculations be provided for the proposed mine expansion. SMARA Section 2773.1(a)(4) requires that the financial assurance include **both** the lead agency and the Department of

Mr. Andrew J. Rush  
September 6, 1995  
Page 2

Conservation as payees. To be acceptable, the financial assurance must include a rider or other legally-acceptable device that names the Department of Conservation as a payee. The financial assurance should read: "San Bernardino County or the Department of Conservation." Prior to approval, a copy of the financial assurance must be forwarded for review to the Office of Mine Reclamation, Reporting and Compliance Unit, 801 K Street, MS 09-06, Sacramento CA 95814-3529.

4. Public Resources Code, Division 2, Chapter 2, Section 2207 requires that the person in charge of any mining operation file an initial report and subsequent annual reports with the State and lead agency and pay reporting fees. The applicant should be advised that regulations adopted by the State Mining and Geology Board require that the initial report and fee be sent to the State within 30 days of approval of a Mining Permit. Reporting forms and fee information are available from the Office of Mine Reclamation, Reporting and Compliance Unit, 801 K Street, MS 09-06, Sacramento CA 95814-3529; telephone (916) 323-9198.

Please send a copy of the approved reclamation plan, response to our comments, and permit issued by you as lead agency under SMARA to the Office of Mine Reclamation at 801 K Street, M.S. 09-06, Sacramento, CA 95814-3529. The approved documents will be placed in the OMR files pursuant to the Surface Mining and Reclamation Act.

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact James S. Pompy, Manager, Reclamation Unit at (916) 323-8565.

Sincerely,



Thomas A. Campbell  
Environmental Analyst

cc: James S. Pompy, Office of Mine Reclamation  
Deborah Herrmann, Office of Mine Reclamation  
Neal Krull, Regional Water Quality Control Board





# United States Department of the Interior

## NATIONAL PARK SERVICE

Mojave National Preserve  
222 East Main Street, Suite 202  
Barstow, California 92311

IN REPLY REFER TO

L3023

August 17, 1995



County of San Bernadino  
Public Works Group, Planning Department  
385 North Arrowhead Avenue, Third Floor  
San Bernadino, CA 92415

United States Department of the Interior  
Bureau of Land Management, Needles Resource Area  
101 West Spike's Road  
Needles, CA 92363

re: Castle Mountain Mine, Plan Amendment Application

Dear Sir or Madam,

Mojave National Preserve (MOJA) offers the following comments on the subject Plan Amendment Application for your consideration.

### General Comments

As an adjacent land managing agency, the National Park Service (NPS) is concerned with the proposed expansion of the Castle Mountain mine and Viceroy's additional request for reduced mitigation and reclamation requirements. We firmly believe that conditions placed upon the original mine permit on October 7, 1990, should remain in place considering the size of the mine expansion proposed and the recent designation of lands adjacent to Viceroy's claim boundary as a unit of the NPS and designated Wilderness.

Three specific issues surface in the subject document that have the potential to directly affect MOJA. These three issues are:

Water Quality Monitoring at Piute Spring - Piute Spring is a unique and irreplaceable resource in MOJA. Therefore, MOJA adamantly disagrees with Viceroy's proposal to reduce spring monitoring frequency from monthly to bi-annually. Reduced monitoring frequency could result in any possible impacts to the spring not being discovered until the problem is beyond that which could be mitigated. The proposed increase in mine size and a mine life that will double that originally requested by Viceroy leads us to believe that water requirements of the Castle Mountain mine may increase significantly and certainly will continue for a longer time period.

Staining of Freshly Exposed Rock Faces - The subject document states that Viceroy would like to delete a requirement from their original permit to stain rock faces exposed by mining. The staining would reduce visual intrusion caused by newly exposed rock faces that are much lighter than the country rock. MOJA strongly urges the permitting agencies to uphold this requirement. Viceroy's proposal for a 61% larger mine site coupled with the recent designation of adjacent lands as a National Preserve and designated Wilderness makes it all the more important that the operators of the Castle Mountain mine fulfill their earlier promise to reduce visual intrusion of the mine by implementing the rock staining process.

Amending Conditions and Stipulations for Vegetation Salvage - Although we would prefer a vegetation salvage rate higher than the 25% granted Viceroy in their initial permit, we would encourage the permitting agencies to very closely scrutinize "Exhibit B" of the subject document. The permitting agencies should determine if the Mojave yucca and the Blue yucca exist in the natural surroundings to the same extent as do the Joshua tree and Barrel cactus. Considering the large amount of land disturbance proposed by Viceroy, revegetation of the same species density and diversity is of paramount importance in the effort to reduce visual intrusion on MOJA visitors resulting from the Castle Mountain Mine.

#### Specific Comments

Page S-2, S.1.2, Property, Location and Access, 3. - This paragraph mentions that "[s]econdary access is provided by . . . the Hart Mine access road." The permitting agencies should acknowledge that this road is in MOJA boundaries. Therefore, use



of the Hart Mine road for Castle Mountain mine activities would make transportation related to the mining operation subject to certain provisions found at 36 CFR Part 9 Subpart A.

Figure S-1 - This map should also show MOJA boundaries.

Page S-8, S.2, Permit Revisions - Please refer to our earlier paragraphs under the heading of "General Comments" for our comments on permit revision issues.

Page S-12, S.2, Permit Revisions, 9. - The permitting agencies should closely examine whether Viceroy's ten year reclamation monitoring period is still adequate considering the company is requesting to double the mine life to 20 years and increase the permit boundary by 61%.

Page S-12, S.3.2, Revision to Site Boundary, 2. - This paragraph notes that Viceroy recently purchased the Milma Patent. The subject document should also disclose whether Viceroy is in the process of, or is planning to purchase any additional patented property in the area excluded from MOJA.

Page S-12, S.3.3, Revisions to Frequency of Monitoring at Piute Spring, 4. and 5. - These paragraphs state that since 1991 no significant draw downs have occurred in monitoring wells as a result of mine related activities. Please refer to our previous comment entitled "Water Quality Monitoring at Piute Spring."

Page S-15, S.3.4 Revision to Eliminate Rock Staining Requirement, 7. - This paragraph, which refers to Viceroy encountering lighter colored clay materials during mining strengthens our concern regarding deletion of the rock staining requirement from Castle Mountain's permit. Please refer to our previous comments entitled "Staining of Freshly Exposed Rock Faces."

Page I-3, 1.1.4, Goals and Objectives of the Reclamation Plan - The fifth paragraph in this section notes that Viceroy will enhance the visual appearance of the area by reclaiming the north clay pit and reducing visual contrasts caused by excavations. This statement acknowledges that excavations are indeed a cause of visual intrusion. Therefore, the permitting agencies should maintain their original requirement that Viceroy use the rock staining technique on freshly exposed rock faces.

Page I-8, 1.2.2, Post-Mining Land Use, 3. - This section states, under a heading of "Compatibility With Adjacent Land Uses" that "[c]ongress encourages mineral development . . . " and that Congress specifically excluded Viceroy's claims from MOJA. These statements are true: This section does not, however, discuss how the Castle Mountain mine is compatible with NPS and MOJA mandates. Please rectify the paragraph with the paragraph heading.

Page I-41, 1.11.1.1, Mine Pits and Overburden Sites, 4. - This paragraph states that all depressions and infiltration basins will be designed to contain surface run-off generated during a "Probable Maximum Precipitation event." Please define the event in terms of years and hours such as a "100 year, 24 hour event."

Page I-48, 1.11.2, Groundwater, 4. - The paragraph states that transmissivity of the aquifer is "somewhat lower" than the estimate used in initial ground water modeling. Since transmissivity is lower, but not nonexistent, the permitting agencies should continue to require monthly monitoring of Piute Spring.

Page I-49, 1.11.2, Groundwater, 13. - This paragraph notes that the bottom elevation of the open pits is higher than that of the ground water table, therefore pits will not intercept ground water. This statement does not coincide with drawings and other statements in the subject document that note that final pit bottom elevations may vary by as much as 200 feet. The Lesley Ann pit, for instance, depicts a bottom elevation of 3750 feet and a ground water table of 3600 feet (Figure II-4). If the pit bottom varied by 200 feet (deeper), then the pit floor would be 50 feet into the aquifer. The probable consequence would be some amount of aquifer dewatering.

Figure II-8 - Please depict ground water elevation in this drawing.

Figure II-10 - Please depict ground water elevation in this drawing.

Figure II-16 - Please depict ground water elevation in this drawing.

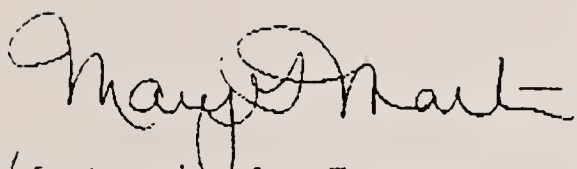
Exhibit "B," Condition number 48(C) - This paragraph notes that accurate vegetation plot data is unavailable because Viceroy



cannot find some of the designated vegetation test plots. We submit that the permitting agencies should require Viceroy to find the lost plots and incorporate necessary data into the vegetation density and diversity schemes. This effort may assist in improving revegetation efforts.

We appreciate the opportunity to comment on the subject DEIS. If you have any questions, or if we can be of further assistance, please call Jim Wood of my staff at (619) 255-8843.

Sincerely,

  
for Marvin O. Jensen  
Superintendent

# *Mojave Desert*

## *Air Quality Management District*



15428 Civic Drive, Suite 200, Victorville, CA 92392-2383  
(619) 245-1661 Fax No. (619) 245-2699

Charles L. Fryxell  
Air Pollution Control Officer

August 21, 1995

Andrew J. Rush, Senior Associate Planner  
Policy, Environmental and Geographics Section  
County of San Bernardino Planning Department  
385 North Arrowhead Avenue  
San Bernardino, CA 92415-0182



**Re: Viceroy Gold Castle Mountain Gold Mine Expansion NOP**

Dear Mr. Rush:

The Mojave Desert Air Quality Management District (MDAQMD) has received and reviewed the Notice of Preparation of a joint Environmental Impact Statement/Environmental Impact Report (EIR) for the Expansion of Viceroy Gold's Castle Mountain Gold Mine. The MDAQMD recommends that the following comments be addressed in the EIR:

The proposed project involves substantial increases in the scope of mine operations, including active quarry activity (blasting, transfer and crushing), overburden pile area, and haul road area. These increases have the potential to produce sufficient criteria emissions to generate adverse environmental impacts. The following criteria emissions should be quantified: (1) emissions resulting from operations (blasting, transfer, crushing, truck traffic); (2) indirect PM<sub>10</sub> emissions resulting from wind erosion; and (3) cumulative emissions resulting from expanded operations in conjunction with existing operations. These quantified emissions should be compared to the MDAQMD significance thresholds: PM<sub>10</sub> at 15 tons per year (tpy); oxides of nitrogen at 25 tpy; volatile organic compounds at 25 tpy, and carbon monoxide at 100 tpy. Emissions in excess of the significance thresholds should be mitigated to the extent possible.

A Dust Control Plan that describes existing and proposed fugitive dust control measures should be prepared for the facility, including measures implemented to ensure compliance with MDAQMD Rule 403.




Mr. Rush

Page 2

The MDAQMD appreciates the opportunity to comment on the proposed project. If you have any questions regarding these comments or need any additional information, please contact Alan De Salvio, Air Quality Specialist, at (619) 245-6122.

Sincerely,

A handwritten signature in black ink, appearing to read "Christian N. Ihenacho", with a long horizontal flourish extending to the right.

**Christian N. Ihenacho**  
Supervising Air Quality Planner

CNI:ajd

castlex.doc

County Museum,  
Archaeological

VICINITY MAP

NEW YORK AVENUE  
WILDCAT CANYON  
INDIAN SPRING  
FORT PICIE  
NEVADA  
CALIFORNIA  
NEVADA NATIONAL PRESERVE  
BOUNDARY  
SITE BOUNDARY  
VICINITY CLAIM  
BOUNDARY  
MCJANE ROAD  
OUTSTANDING NATIONAL AREA  
0 1 2 3 4 5  
MILES  
01 CARLTONS CANYON  
02 INDIAN SPRING  
03 FORT PICIE

See ATTACH

A-16



CALIFORNIA  
ARCHAEOLOGICAL  
INVENTORY



ARCHAEOLOGICAL INFORMATION CENTER  
San Bernardino County Museum  
2024 Orange Tree Lane  
Redlands, California 92374  
(909) 792-1497  
(909) 798-8585 - FAX

HISTORICAL RESOURCES REVIEW  
FOR THE COUNTY OF SAN BERNARDINO PLANNING DEPARTMENT

Planning Number: SAMR/95-0006/DN 1145-581 N  
Acres: 2885 Miles: \_\_\_\_\_  
USGS Quad(s): Hart Peak 7.5 (2244); Castle Peaks 7.5 (2243)

Previously Inventoried Historical Resources (that is, resources older than 45 years in age, including prehistoric and historic archaeological resources, historic resources and cultural landscapes; and ethnic resources)

\_\_\_ None known to exist within or adjacent to the project area

Reported to exist:

☒ Within the project area, including:

Prehistoric archaeological resources: 34 SITES

Historic archaeological resources: 4 SITES WHICH ARE NATIONAL REGISTER ELIGIBLE PROPERTIES.

Historic resources: \_\_\_\_\_

Cultural landscapes: \_\_\_\_\_

Ethnic resources: \_\_\_\_\_

\_\_\_ Adjacent to the project area.

Historical maps examined: \_\_\_\_\_

Previous Field Surveys for Historical Resources

\_\_\_ No reports of surveys within the project area are filed at the AIC.

Survey reports filed at the AIC for:

☒ Entire project area.

\_\_\_ Portion of the project area.

\_\_\_ Portion of the area adjacent to the project area.

For purposes of resource inventory, evaluation of site significance and site integrity, reports within the project area appear to be:

☒ Adequate.

☒ Inadequate.

Area-specific report numbers and comments: NADB #'S 1061680 (I), 1061691 (I), 1061694 (I), 1061695 (A), 1061696 (A), NADB 1061701 (I), 1061743 (A), 1061363 (I), 1062289 (I), 1061676 (I)

Planning Number: SAMR/95-0006/DN 1145-581N

Potential for the Presence of Historical Resources

Based upon available information, the potential for the presence of historical resources within the project area is:

	Low	Moderate	High	Unknown
Prehistoric archaeological resources	—	—	<u>✓</u>	—
Historic archaeological resources	—	—	<u>✓</u>	—
Historic resources	—	—	<u>✓</u>	—
Cultural landscapes	—	—	—	—
Ethnic resources	—	—	—	<u>✓</u>

Comments: THIS AREA HAS BEEN SUFFICIENTLY STUDIED. NO FURTHER WORK IS NEEDED

Recommendations (following CEQA and NEPA guidelines)

Historical resource determination:

- ☒ Negative declaration is recommended.
- ☐ Negative declaration with the adoption of previously recommended mitigation measures for historical resources is recommended, see report(s) numbered: \_\_\_\_\_
- ☐ An historical resources report is recommended to inventory resources, to evaluate their significance and integrity, and to propose appropriate mitigation measures.

A field survey and subsurface testing for historical resources:

- ☐ Is recommended (see Referral List of Historical Resource Consultants).
- ☒ Is not recommended.

Prior to initiation of a field survey, a records check for previously reported historical resources and/or cultural reports on file at the San Bernardino County Archaeological Information Center:

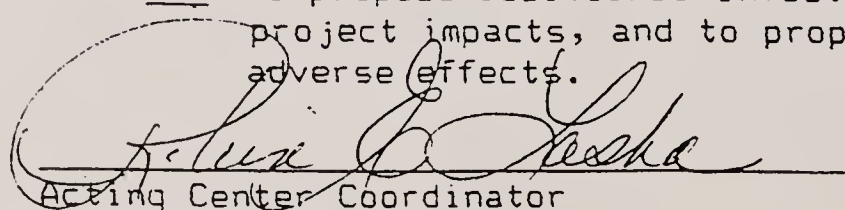
- ☐ Is recommended (see Information Center announcement).
- ☒ Is not recommended, due to the lack of information.

To document where historic resources were built and/or when they were constructed, an archival property search:

- ☐ Is recommended.
- ☒ Is not recommended.

Submission of a historical resources management report is recommended (see Archaeological Resource Management Reports: Recommended Contents and Format):

- ☐ To document the field survey.
- ☐ To document subsurface testing.
- ☐ To document the archival property search.
- ☐ To evaluate resource significance and integrity.
- ☐ To propose additional investigations if required, to evaluate project impacts, and to propose measures to mitigate potential adverse effects.

  
Acting Center Coordinator

13 SEPT 95  
Date



**APPENDIX B**  
**SCOPING MEETING NOTICE,**  
**ATTENDEES, AND ISSUES RAISED**

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# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
NEEDLES RESOURCE AREA  
P.O. BOX 888  
NEEDLES, CALIFORNIA 92363-0888



IN REPLY REFER TO:

## NOTICE OF EIS/EIR PUBLIC SCOPING MEETINGS CASTLE MOUNTAIN MINE OPERATIONS AMENDMENTS

Viceroy Gold Corporation, operator of the Castle Mountain Mine, has submitted applications to the USDI Bureau of Land Management (BLM) and County of San Bernardino (County) to modify and expand mine operations. The Castle Mountain Mine is an open pit heap leach gold mine located in Lanfair Valley, California, about 20 miles southwest of Searchlight, Nevada.

The proposed operational revisions would extend the mine operating period 10 years. The open pit, overburden and leach pad areas would be modified and enlarged and partial pit backfilling would be incorporated. The approved rates of mining and processing, and related operational parameters would not change.

In compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), an Environmental Impact Statement/Environmental Impact Report (EIS/EIR) will be prepared to evaluate and disclose the environmental effects of the operations amendments. The BLM and County will hold public scoping meetings to solicit environmental issues and concerns to be addressed in the EIS/EIR from interested individuals, organizations, agencies, and public officials. The meetings are scheduled as follows:

### SEARCHLIGHT, NEVADA

Location: Searchlight Community Center  
Parks and Recreation Department  
200 Michael Wendall Way  
Searchlight, Nevada

Date: August 2, 1995  
Time: 7:00 PM

### BARSTOW, CALIFORNIA

Location: Holiday Inn  
1511 East Main Street  
Barstow, California

Date: August 3, 1995  
Time: 7:00 PM

Additionally, comments on the scope of the EIS/EIR may be submitted in writing to the BLM at the following address:

USDI Bureau of Land Management  
Needles Resource Area  
P.O. Box 888  
Needles, CA 92363-0888  
Attention: Mr. George R. Meckfessel

Questions may be directed to Mr. Meckfessel at (619) 326-3896.



# CASTLE MOUNTAIN MINE PLAN AMENDMENTS ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT

# SIGN-IN SHEET

[illegible]

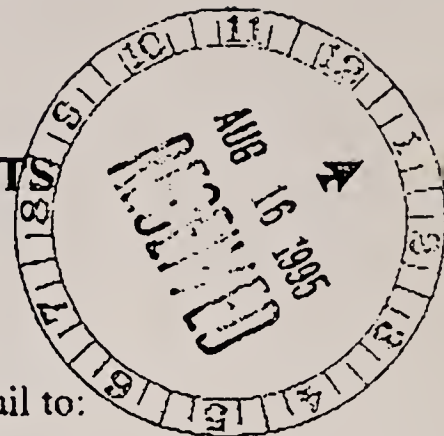


# CASTLE MOUNTAIN MINE PLAN AMENDMENTS ENVIRONMENTAL IMPACT STATEMENT/ENVIRONMENTAL IMPACT REPORT

## SIGN-IN SHEET

[illegible]

WRITTEN STATEMENT  
CASTLE MOUNTAIN MINE PLAN AMENDMENTS  
EIS/EIR



Submit to BLM or County representative at scoping meeting or mail to:  
USDI Bureau of Land Management, Needles Resource Area,  
P.O. Box 888, Needles, CA 92363-0888, Attn: Mr. George R. Meckfessel.  
Mailed statements should be postmarked no later than August 18, 1995.

Viceroy Gold Corporation, Castle Mountain  
Venture, since it's inception, has been an  
innovative and responsible mining operation.

My only concern regarding their expansion  
proposal is continued access to an area, near  
the site of Hart, where Native Agate occurs.  
With the permission of Viceroy Gold Corp we  
have been able to continue collecting this material  
during current mining operations.

Since rockhounding opportunities on our  
Public land continue to diminish or are halted  
altogether, it is extremely important to the  
rockhounding community to preserve access to  
as many collecting sites as possible for our  
future generations.

Submitted By:

Sue Hickman

Name (please print)

P.O. Box 36

Street Address

Yermo

CA

92398

City

State

Zip





# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
NEEDLES RESOURCE AREA

P.O. BOX 888  
NEEDLES, CALIFORNIA 92363-0888

(619) 326-3896



IN REPLY REFER TO.

## FACSIMILE TRANSMISSION

### Memorandum

To: Dave Brown

From: George Meckfessel

Subject: Two Mailing List amendments and One Comment Letter

Total Pages: Two

### Message:

#### BLM MAILING LIST UPDATE

##### 1) RESOURCE MANAGEMENT INTERESTS:

Please specify your interests, such as projects relating to recreation, range, wilderness, rights-of-way, mineral development, etc.):

Accretion  
Range  
Wilderness  
Tortoise

##### NOTIFICATIONS REQUESTED:

- ☒ Land Use Plans
- ☒ Environmental Assessments and Environmental Impact Statements:
- ☒ Receive Project Status Notifications
- ☒ Receive Documentation for Review and Comment

##### 2) Please Print:

Name: Dennis G. Caschen

Company/Organization: Friends of the Mojave River

Address: Box 7

City, State, Zip Code: Essex, CA 92332

#### BLM MAILING LIST UPDATE

##### 1) RESOURCE MANAGEMENT INTERESTS:

Please specify your interests, such as projects relating to recreation, range, wilderness, rights-of-way, mineral development, etc.):

all of the above

##### NOTIFICATIONS REQUESTED:

- ☒ Land Use Plans
- ☒ Environmental Assessments and Environmental Impact Statements:
- ☒ Receive Project Status Notifications
- ☒ Receive Documentation for Review and Comment

##### 2) Please Print:

Name: Yucca Valley Branch Library

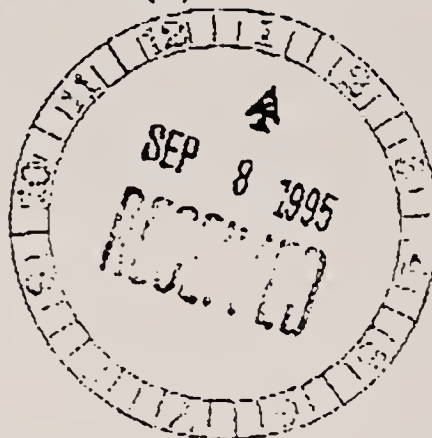
Company/Organization: 57098 27 Palms Highway

Address: Yucca Valley, CA 92284

City, State, Zip Code: 92284

**LASER, INC.****LEGAL AND SAFETY EMPLOYER RESEARCH**

AN INDEPENDENT, INCORPORATED DIVISION OF THE WESTERN STATES PIPE TRADES  
670 Kentucky Street, Gridley, CA 95948 (P) 916/846-6352 (F) 916/846-5274



USDI

BLM-Needles RA

101 w. Spikes RD

Needles CA 92363

Dear Mr Meckfessel:

Here are LASER's scoping concerns regarding the Castle Mountain expansion. Please send the DEIR/EIS to LASER's consultant:

✓ JOHN WILLIAMS

12770 SW FOOTHILL DR

PORTLAND, ORE 97225

503-626-5736, FAX 503-641-2093

Thank you for your agency's past and future cooperation.

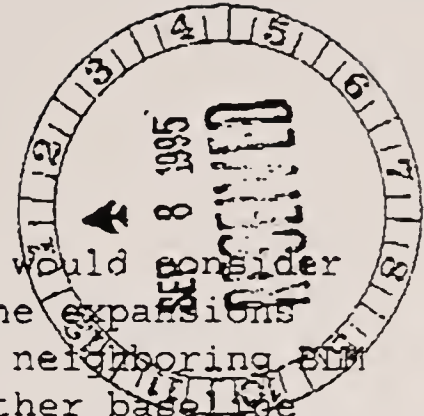
Yours,

Jim Wilson

cc: John Williams

attorney Linda Williams





## PROCEDURE

A "Master" EIS may be appropriate. This EIS would consider the cumulative impacts of past and anticipated mine expansions and minerals exploration projects within this and neighboring BLM districts and National Forests. The EIS would gather baseline data on the current environment in these jurisdictions and around this site. It would include evaluations of the existing air and water quality, summaries of typical impacts from mining, and inventories of wildlife and plant life.

After this comprehensive review, future proposals for minerals exploration and mining could be handled by incorporating by reference the "Master" EIS' findings into individual EISes that would be completed for future minerals exploration and mining projects.

A sweeping examination of the cumulative impacts from minerals exploration and mining would benefit the review process. It is difficult to evaluate the probable total impacts of exploration projects, mines, and mine expansions when considering these proposals one by one. But without weighing the probable total impacts, one cannot recommend appropriate mitigations. The cumulative impacts of these projects can be considerable. These cumulative impacts should be evaluated in a single comprehensive document.

## PROJECT AND AREA DESCRIPTION

Please include a land ownership map for the surrounding area, and a preliminary site plan, including the anticipated location of all major structures, roads, parking areas, on-site temporary housing, staging areas, construction material sources, and toxic and hazardous material handling and storage areas.

Please provide a general description of the major components of the facility, including boilers, leach pads, steam generators, turbine generators, power lines, transformers, roasters, autoclaves, cooling facilities, SW/EX facility, production equipment, pits, haul roads, tailings piles, stream diversions, stormwater, process water, barren solution and pregnant solution ponds, and heaters.

Please describe the amounts of material that flow into the project (for instance water, ore, natural gas, caustic, reagent, chlorine, diesel, electricity) and product and byproduct that flow out of the project. (air emissions, ore concentrate,

PAGE 2

tailings, waste water, solid waste)

Please list all permits needed by the project, and the address and contact person at the permitting agencies. Please place our name on the mailing lists, or notify the other permitting agencies, of our wish to review those permits as they become available for public comment.

Please estimate the existing and projected noise levels at the project site.

Please describe the project area's land use patterns at and near the site location, including descriptions of any state or local land use plans.

Describe the procedures proposed to mitigate losses of animal and plant life, or recreational areas and facilities, including a description of monitoring programs to assess the impacts of the proposed mine and the effectiveness of those controls to mitigate environmental, social and economic impacts of the proposed mine.

#### **SIGNIFICANT IMPACTS THAT SHOULD BE DISCUSSED IN A REVIEW OF THE PROPOSED PROJECT**

LASER is concerned about the proposed mine expansion's potential impacts on the air and water quality. There could be also be adverse socio-economic consequences if there is importation of an out of state construction and production work force.

LASER's concerns regarding socio-economics stem from the commonly employed hiring practices and construction techniques of many engineering firms and out of state low-wage construction contractors in the mining industry.

What follows is a list of details and information that should be included in the EIS for this project.

#### **AIR QUALITY**

The EIS should discuss the cumulative air quality impacts from the existing facility, the proposed project, and the existing emissions from the nearby mines, mills, and other air pollution sources. The total effect of this area's air pollution



PAGE 3

on the health of humans and wildlife and plant life needs evaluation.

The EIS should describe whether or not the area near the proposed mine is in compliance with state and federal standards for criteria and non-criteria pollutants. It appears that the PM-10 (fine particulate) standard may be modified in the near future to separately regulate very fine particulate, such as particles 1 to 2.5 micrometers in diameter (PM 1.0 -PM 2.5). Please estimate the amounts of PM 1.0 and PM 2.5 to be emitted by this project from all point source and fugitive and indirect emissions.

The EIS should include a table showing any measurements of current and recent concentrations of air pollutants in and near the proposed site, including nearby mines, both on and off site. These measurements should include any sampling by the state and federal environmental agencies, or by inspectors from the state and federal Occupational Safety and Health Administration, the federal Mine Safety and Health Administration (MSHA).

The DEIS should describe how federal agencies such as BLM will demonstrate the project's compliance with the State SIP (State Implementation Plan), as required by 40 CFR 6, 51, 93, (FR Vol. 58, No. 228, 11/30/93, p. 63214-63259). Please notify us of the public comment period regarding federal agencies' compliance with the state SIP regarding this project.

#### PARTICULATE EMISSIONS

The proposed project will emit particulate matter (PM) from the non-point sources of traffic on unpaved roads, erosion from waste rock and tailings piles and ore stockpiles, and dust from drilling and explosives. Point sources of PM include silos, crushers, screening, truck and leach pad loading and unloading, the SW/EX facility, generators during construction and operation, and the conveyors and elevators.

#### IMPACT FROM CONSTRUCTION AND ROAD BUILDING

The mine construction will cause discharges to the air of PM, oxides of nitrogen (NOx), carbon monoxide (CO), hydrocarbons (HC), and sulfur dioxide (SOx) from windblown and vehicle generated road dust, blasting, vehicle and equipment engines and generators, drilling equipment, and gravel crushing for road

PAGE 4

building.

The construction and improvement of roads will require thousands of hours of operation of heavy equipment and power tools, including bulldozers, backhoes, graders, chainsaws, and cranes. This equipment will generate additional air pollutants. Surfacing the new and improved roads may necessitate rock crushing operations, which will generate PM from the crushing, and other air pollution from the equipment engines.

The engines and compressors that power the roadbuilding and construction equipment should be described, the quantities of each type of engine should be listed, the total hours of operation for these engines should be figured, and the resulting pollution tonnage and concentrations of PM, HC, Nox, CO, and Sox from those diesel and gasoline fumes should be calculated.

The emissions from these sources can be calculated with criteria developed by the Federal Environmental Protection Agency's "AP-42" methods. Alternative low-pollution fuels for vehicle and equipment engines, and dust control measures such as haul road paving should be discussed.

#### DIESEL STORAGE AND USE

Typically mines and their related equipment consume hundreds of thousands of gallons of diesel fuel annually. This energy use by itself is a significant impact, both as use of fossil fuels, and as a source of air pollution. The EIS should say how much diesel fuel will be consumed by the mine equipment and vehicles monthly and annually, how much diesel is stored on site, how often there are deliveries, and the Hydrocarbon emission rate from the storage tanks, from refueling of vehicles and equipment, and from vehicle and equipment exhaust. Since nickel (and other toxics) is emitted in diesel (and gasoline and fuel oil) exhaust, the amount of nickel emissions and other toxics such as chromium, benzene, benzo a pyrene, and polycyclic aromatic hydrocarbons should also be estimated from diesel use and other sources.

#### EMISSIONS INVENTORY

The proposed project may have several point sources of lead and other metals, CO, NOx, ammonia and other toxics, acid, hydrocarbons, PM and SO2. These potential sources may include



PAGE 5

crushers, conveyors, silos, elevators, natural gas, oil or coal-fired heaters and boilers, acid drift from the acid handling processes, storage tanks, oxidation processes, solvent extraction and electrowinning (SX-EW) circuit processes, storage, loading and unloading, and regeneration of materials including but not limited to solvents, carbon, acids, and drift from leach pad sprayers.

The project's expected emissions in lb/hr. and ton/yr. from both point and non-point sources, and the average and maximum concentrations of these pollutants at different distances from the project should be described and mapped, with attention paid to the areas (even within the mine property lines) where there are any predicted exceedances of air quality standards. This should include but not be limited to concentrations of air pollutants near the mine site and at the nearest Class I air shed.

An emissions and air pollution source inventory for the nearby mines and other air pollution sources, including but not limited to mineral exploration projects should be provided. Criteria, non-criteria and toxic pollutants should be listed. As mentioned above, special attention should be given to providing PM 1.0 and PM 2.5 emissions data.

#### TOXIC AIR EMISSIONS

Mine Safety and Health Administration (MSHA) records show that many metal mine and mill workers become ill from exposure to high levels of lead, cyanide, chlorine, ammonia, and sulfur dioxide.

Several incidents at gold mines may also be relevant. MSHA records on mine workers at Newmont and IMC in Nevada, and the Stibnite/West End mine in Idaho show they suffered injury from exposure to chlorine, for instance. While this mine has enclosed leaching facilities, workers may still suffer injury from handling of cyanide. Alternatives to cyanide, such as thiourea should be discussed.

PAGE 6

MSHA records show that some of the Annie Creek, South Dakota mine workers have elevated lead levels in their blood. Lead (and other metals) could be pollutant emitted by this Mine if it is located in the ore or overburden, or if it is used in the components of the SW/EX process, for instance the alloy anodes.

The DEIS should evaluate OSHA 200 logs and MSHA 7000-1 forms that report accidents, injuries and illnesses at mines with processes similar to this proposal to determine what health hazards may be present. This would also assist estimates of the mine's impacts on local health services.

Emissions of these substances from this facility should be evaluated. The potential for this proposal to emit lead, mercury, silica, cyanide, diatomaceous earth dust, chlorine, arsenic, ammonia, hydrochloric acid, diesel fumes, and other metals and toxics should be considered. Depending on the configuration of the facility, and the ore and waste rock characteristics, silica, mercury, cobalt, arsenic, bismuth, and selenium may be emitted. If it is forecasted that this mine will emit these or other toxic materials, then the health effects of these substances on its workers, and on nearby populations, should be described.

If toxic materials will be emitted, and these materials could cause or contribute to elevated levels of respiratory diseases, cancers, or other ailments, then these illnesses should be listed and described.

The DEIS should include information from local and national cancer registries and state and federal logs of occurrences of respiratory diseases and cancers, showing the current incidence rates for these illnesses in nearby Counties.

#### BACT/LAER SHOULD BE REQUIRED

Air pollution controls for the proposed expansion should be described. Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) for the potential point sources should be discussed.

Other potential controls should include but not be limited to road watering or paving, drilling and explosive dust controls,



PAGE 7

enclosure of leaching, solvent and electrowinning extraction processes, scrubbers, and alternative low pollution vehicle and engine fuels such as methanol and propane.

Air permits for similar facilities, and this Mine's air permit application, should be appended to the DEIS, to provide an overview of emissions and controls that could be expected.

#### PREVENTION OF SIGNIFICANT DETERIORATION (PSD) REVIEW

If the project will emit more than 250 ton/year of any single air pollutant, then it is required to undergo a PSD review by the EPA or its delegate. The DEIS and the air permit applications should be sent to the EPA, Region 9 to determine if a PSD review is required.

#### WATER QUALITY

The surface water and groundwater in the vicinity of the proposed pits should be described fully. The DEIS should contain a site map and a cross-section that compares the proposed mine activity with the aquifers and surface water bodies, and their recharge and discharge areas. Probable effects on groundwater and surface water should be discussed, including cumulative impacts with other mines in this groundwater basin.

The impact of prior mining activities on the area's water should be described. The water quality downstream of the mine site, along with the uses of these water bodies, should be discussed. Any areas where surface water drainages will be filled should be presented on a clearly marked map and the amounts and habitat values of the affected acreages should be listed.

#### WATER USE

Where does mine process water come from, and how will waste water be discharged, and in what amounts, and containing what contaminants? The impact of the ground water drawdown from mine dewatering and well water usage on the area's surface water and well water supply should be detailed. The cumulative effect of the other mines in the area and their dewatering should be considered.

The mine's drawdown of groundwater should be discussed regarding its effect on other water users. A description of the area's groundwater rights and the current holders of these

PAGE 8

rights, including the location and use of nearby wells, the amounts to which they are entitled, the depths of their wells, and the current drawdown rate should be described.

Amounts of water pumped, discharged, and consumed by proposed and other nearby current and future projects should be estimated and the cumulative effects described. How will additional blasting and drilling affect groundwater?

#### GROUNDWATER

The DEIS should characterize and identify each aquifer/water bearing zone that may be effected by the mining operation. Enough information should be provided to determine the flow rate and direction of groundwater movement in each aquifer/water bearing zone in the vertical and horizontal zones, as well as the ground water quality.

The area's aquifers should be characterized by type; unconfined, confined, leaky, perched, geothermal, etc.

If geothermal features or hot springs are in the area, then drilling or the digging of mine pits may drain or vent these sources. This possibility should be examined.

The following data should be provided:

The potentiometric surface of each aquifer based on simultaneously measured water level data.

The hydraulic conductivity of each aquifer, the regional and local groundwater flow pattern, flow velocities/rate and direction, temperature, the regional and shallow groundwater quality, local and regional flow boundaries for each aquifer, and the storage coefficient for each aquifer.

The porosity measurements for each aquifer, (important for groundwater flow velocity calculations), the vertical hydraulic gradient within each aquifer, a fracture description and orientation to assess boundaries or conduits.

Aquifer testing is suggested to determine flow boundaries, storage coefficient, and transmissivity/hydraulic conductivity.



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Geophysical logging is suggested to confirm lithology and saturated zone locations.

What lithologic units are saturated? What lithologic units act as confining layers? What units serve as aquifers? What is the chemistry of each aquifer and how does it vary spatially? Where and how do the aquifers recharge and discharge?

Data from nearby wells should be presented, including the lithology, type of material, depth to top and bottom of each lithologic section, the depth to the top and bottom of each water-bearing zone, the water quality, temperature and flow rate from each zone, and the static water level associated with each zone.

Samples from wells that extend beyond the bottom of the proposed bottom of the mine pits are needed, to adequately characterize the deeper aquifers that may be affected by the mine.

When the mine is closed, the pits may fill with water that is highly acid and lacking oxygen. This possibility should be examined. The alternative of backfilling the pits should be explored. Recent BLM memos in California strongly support backfilling as mitigation for the large surface disturbance at mine sites.

#### STORM WATER AND PROCESS POND AND PIT CAPACITY

Any impoundments containing process water should be contained in tanks and underlain with two synthetic liners and compacted clay, and a leak collection system. These containment structures and the surface water diversion channels should be bermed and sized to contain runoff from a 24 hr., 1000-yr. storm event. The dimensions of recent flows in nearby streams and surface water bodies nearby should be described, including flash floods.

#### LEACH TREATMENT ALTERNATIVES

Treatment of cyanide solutions with ferrous sulfate or other materials should be evaluated.

This same criteria should also be provided for the pregnant ponds and storm water ponds.

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POSSIBLE EFFECTS ON WILDLIFE, THREATENED AND ENDANGERED SPECIES,  
AND THEIR HABITAT

Describe the project area's species, their populations, available habitat, their migration routes, and the summer and winter ranges of wildlife in and near the project area, particularly species that are listed or proposed for listing as endangered or threatened, or are species of state or Federal concern.

Changes in surface water distribution can affect fish and wildlife abundance and distribution. Since the project is located in an arid environment, all existing water sources have wildlife dependent upon its current location. Any disruptions by the project to surface springs, groundwater, and surface water bodies should be clearly documented and mitigated. For instance, the construction of the tailings facility will involve diversion of surface water.

The EIR/EIS should use the Habitat Evaluation Procedures to determine the effects on Habitat Units (HUS) for indicator species in the affected area before, during and after the project, and during and after reclamation during benchmark years.

INCREASED SILTING

This project and its ground disturbance and overburden piles will increase erosion. The silt in this erosion may adversely affect surface water bodies and could harm the habitat of fish and wildlife.

The proportion of fine sediment less than .25" in diameter in the erosion caused by the mine should be estimated and the impact of these fines on fish spawning grounds should be described. The cumulative effect of sediment from other mines and other sediment sources on fish habitat and spawning grounds should be discussed.

BLASTING

Blasting may drive away many animals. During blasting at a hydroelectric project on the Pit River in Northern California, the antelope population abandoned the area, even after blasting ceased. (California Fish & Game, comments to BLM and BLM



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submitted regarding the Hayden Hill gold mine, 1991)

### SOILS

What are the soils and rock types of the proposed area, how are they distributed, what are their thicknesses, what are their hydraulic and chemical properties, including but not limited to acidity and alkalinity? What is the surface and subsurface geology of the proposed area?

Please describe nearby lithologic formations and their thicknesses. What and where are the area's geologic structures? How many acres of what types of soils will be degraded by the project? Will the Mine be able to stockpile sufficient topsoil for reclamation of the site? It is likely that any topsoil stockpiles will degrade during the years of storage and may come in contact with poor quality soils. In this event, how will the Mine reclaim this site.

### TOXICS

Please list the types of toxic materials used or handled at the proposed facility, including but not limited to acids, caustics, hydrocarbons, ammonia, cyanide, chlorine, zinc, antimony, lead, and cobalt. The amounts of toxics stored on site, the method and frequency of transport for these materials to and from the proposed facility, the amounts of toxics to be emitted into the air and water, the type of pollution controls and storage facilities for the toxic materials, and spill control measures should be discussed.

The project may operate heap leaching and solution ponds. The alternative of containing toxic mine processes within storage tanks, including but not limited to the heap leaching process, should be presented.

Any netting, fencing or other methods to reduce wildlife exposure to cyanide and other toxics at the project's leach pads and toxic pits should be described. These methods should be compared in efficiency and costs to the alternative of tanking these toxic fluids and processes.

### THE AGENCY SHOULD NOT REJECT THESE PROJECT ALTERNATIVES BECAUSE OF THE DEVELOPER'S ECONOMIC JUSTIFICATION

The alternative of containing toxic mine processes within

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storage tanks, including but not limited to the heap leaching process, should be discussed. But before the agency accepts the mine's claims that this alternative should be rejected because of its expense, it should require the calculation of the clean-up costs of reclaiming the conventional heap leach pits. This cost should be compared with the costs of remediating a tank farm that could provide an alternative leaching method.

In addition, the open cyanide process, in contrast with an contained, enclosed system, would increase the chance of spilling and leaking cyanide solution. Storm water would not enter a closed cyanide system as readily, reducing the possibility that the system would flood and release cyanide tainted solution. The possibility of leaks from open processes, and the costs of clean-up, should be compared with the probability of leaks from enclosed processes, and those clean up costs.

#### CONTAMINATION

How will the migration and geochemical reaction of water moving through the open mine, the pits and the tailings piles be calculated? How many aquifers will be modeled? How many dimensions will be considered? What boundary conditions will be used? What will be the water chemistry after percolating through the tailings pile, and what is the chemical fate of this leachate if it enters the subsurface and groundwater, springs, and wetlands?

What will happen if the heap leach and/or tailings liner, or other containers of chemicals or solvents fails/leaks? What will be the leakage rate, the concentration of the solution constituent at the point of leakage and the facility boundary? Where would the leachate solution go? What type of leak detection system will be employed? What are the proposed long term monitoring plans for the facility?

#### UPSET CONDITIONS

The proposed mine will handle large amounts of toxic and hazardous materials. Any severe upset condition could release large amounts of these dangerous agents. An circuit failure or upset could mean that pumps may fail, warning systems would not sound, and toxic releases could begin unnoticed and unabated.



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For instance, a chemical fire and explosion at the Parish Chemical company in Orem, Utah occurred in July, 1992 because of a power outage. (Associated Press, 7/26/92) Such upset conditions deserve serious evaluation in the DEIS.

#### CLEAN-UP

How will the mine provide funds for cleanup/monitoring/reclamation, following mine closure? How will waste, heap leach and tailings piles, ponds and ditches be constructed to prevent leakage, discharge to land surface or drainages, and to detect leakage and discharges? Will the mine have enough topsoil stockpiled for the reclamation?

The DEIS should describe the mining and industrial compliance record of this Mine operator and its parent companies including but not limited to the operation of its subsidiaries and the mines and companies in which it is a partner or major stockholder. This narrative should list all toxic releases by its subsidiaries, or by companies and mines in which it is a partner or large stockholder, and any violations of rules regarding air and water pollution, toxic clean-ups, health and safety violations, and related litigation involving this mine operator.

The DEIS should contain safeguards to insure that the mine promptly clean ups and reclaims its mine site. How will the mining activity affect future and current land uses, including but not limited to tourism, agriculture, timber harvest, geothermal energy, and recreation? What is the lost revenue from these activities that are curtailed by the mining project? How will the recent memo by BLM in California regarding backfill of mining pits affect the obligations to backfill at this site?

#### BONDING

The DEIS should discuss the appropriate size of a bond to finance reclamation of the mine site, such bond to be posted by the mine developer. This sum should be at least \$6000 per acre of disturbed area. The bond should be appropriate to insure protection for the environment for perhaps 100 years of monitoring for the possibility of acid mine drainage.

Please include a statement of the applicant's financial condition, including a profit/loss statement, debt to equity

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ratio and summaries of annual reports for three years. This information is needed to evaluate the bonding requirements.

#### ORE AND WASTE ROCK ANALYSIS

The DEIS should contain information from meteoric water mobility tests on ore and waste rock from the mine site that is representative of each existing and each proposed source of ore. If there are geologic boundaries that geochemically define one region of an ore body from another region within the same body, a meteoric water mobility test must be performed for each region. If a ore body is geochemically homogenous than the mine owner should provide a statement of such.

#### ENERGY USE AND TRANSMISSION LINE

Please discuss the project's energy demand, type and size of transmission line needed, the route of the new line, the population and land uses in and near the line corridor, and state when that line capacity will become insufficient. The energy discussion should include preferred and alternative line routes, reliability, safety, design features, description of towers and foundations, material type of conductors, mid-span ground clearance, spacing between phases, etc., static or lightning protection, insulators, right of way requirements, planned operational voltage and critical voltage, electrical effects such as corona loss, ozone generation, electric power losses, and the creation of electromagnetic fields.

The energy/power line discussion should include the expected location of the construction workforce housing, a discussion of the right of way survey, tower spotting, and the following activities: clearing, road building, foundation installation, tower assembly, conductor installation, cleanup and reclamation, and maintenance.

#### TRANSPORTATION AND SHIPPING

Please describe the mode of transportation for materials to the site and wastes and product away from the site, including access routes, modification of existing traffic patterns, an estimate of the additional traffic to run on the access routes, vehicle emissions, and the method of materials containment during transport.

Include discussion of the possible hazards associated with



this transportation, any safety precautions, and the emergency procedure should an accident occur. The location of any storage facilities or transfer stations should be identified. Please describe how the facility train and truck traffic will comply with state and federal transportation and environmental regulations.

#### SCENIC AND RECREATIONAL IMPACT

The possible effect on tourism from creation of the open pits and other mine impacts should be discussed. Please describe the project area's current scenic resources, their location, extent, and significance to the area, including any archeological and historic resources. Please state if these sites are registered or eligible to be registered.

Please analyze the project area's outdoor, resource-oriented recreational opportunities including locations and types of the recreational resources.

One possible mitigation would be requiring this prospective operator to reclaim any nearby areas degraded other old mining operations.

#### DESCRIPTION OF VEGETATION AND CLIMATE

Please discuss the regional vegetation, including proposed seed mixes for stabilization and reclamation. Please describe the climatic patterns, meteorology, rainfall and snowfall.

The operation of this mine will severely degrade this area, and render it unavailable for other uses such as recreation, grazing, and habitat, by withdrawal of groundwater, and extensive surface disturbance. The DEIS should contain a close calculation and comparison of the financial and other values that could be lost for many, perhaps hundreds of years, as compared to the economic gains from allowing the mine to operate for its life.

#### CONSTRUCTION AND PRODUCTION INFORMATION

Please state when construction is expected to commence, the construction time, estimated construction costs and payroll, total facility cost, estimate of cost of facility subject to use tax, property tax, income, severance and sales tax, as applicable.

Please list the anticipated numbers and job classifications by calendar quarter of employees of the applicant, its

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contractors, and subcontractors during the construction, and in a separate tabulation, during the operating life of the facility, including seasonal fluctuations, peak employment during both construction and operation, annual payroll, and the expected benefits, including housing allowances, transportation allowances, per diem allowances, pension and health benefits.

Please predict the number of employees to be utilized during construction, operation and maintenance of the facility that do not currently reside within 75 miles of the facility, and the number who do not currently reside within this State.

Please describe the methods how the Mine will maximize utilization of local contractors and the local labor force.

#### SOCIO-ECONOMIC INFORMATION

Please include a study of the area economy, including employment projections by major sector, economic bases and trends in the local economy, estimates of basic and non-basic employment, unemployment rates, a study of the area population, including a description of the methodology used, an evaluation of demographic characteristics for the current population, and projections of the area population without the proposed industrial facility.

Please include a fiscal analysis for all local governments and special districts that may be affected by the proposed facility, including revenue structure, expenditure levels, mill levies, services provided through public financing, and problems in providing public services. Please include such services as water supply, solid waste, sewer and waste water and stormwater collection and treatment, library, police, fire, school, social service, health care, and recreational facilities, existing service levels, problems, needs, necessary improvements and expansions, and those related costs.

The discussion on schools should include ratio of students to teachers, enrollment per grade, average class size, physical facilities and their capacities, and vocational training programs.

Please analyze the area's housing facilities by type, the number of units in the area, the current and projected vacancy



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rates, costs, and rental rates.

Please analyze the project area's transportation facilities, including roads, (surface, type and mileage) and railroads (frequency of service, tonnage capacity, and mileage).

#### SOCIO-ECONOMIC IMPACTS

The proposed mine expansion will increase the short term construction work force significantly. These workers could be imported from other areas. The recent FEIS for the Barrick/Betze mine in Nevada estimated that 70% of the workers in the peak construction work force for that expansion are imported.

If the Mine hires this proportion of out of state workers, there will be a significant, unmitigated impact on local social services.

This transient increase in the labor force burdens local social services, such as schools, roads, hospitals, jails, and welfare. This increased cost to social services should be estimated. Mitigation payments from the construction company to local city and county government to compensate for the mine's construction and its associated burdens on social services should also be estimated.

In the past, many out of state companies have been major mine construction contractors. If an out of state contractor is hired for the proposed project, there will be negative socioeconomic impacts. These potential negative impacts should be studied as part of the scoping process for the DEIS.

If an out of state contractor imports almost all of its construction crew, there is little economic benefit to the local area from the construction activity. But an out of state construction work force places heavy demands on the local government infrastructure, principally on housing and campgrounds, roads, health care, schools, and police.

Many construction workers could come and go for the life of the project. Scores of out of state production workers could come and go, as different crafts and skills are in demand during the life of the mine.

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The estimates of economic benefits from the construction and production work force of mine should include the probability that the Mine will import most of their construction and production work force, and run some long term mine functions by importing out of state workers.

An out of area contractor performing continuous functions at the mine would reduce the number of jobs for local workers in the daily operation of this facility. This would affect any estimate of socioeconomic benefits.

In summary, the DEIS' estimates of the socioeconomic impact of this project, and the descriptions of possible alternative configurations of the project, should scrutinize the economic burdens from an imported construction and production work force. This burden should be contrasted with the project alternative of a local construction and production work force that is paid prevailing area wages and which receives a health plan.

Discussion of project alternatives should include possible mitigations for the project that would increase local hiring of construction labor. This could be accomplished with a local hire or prevailing wage requirement as a condition of this DEIS and this mine's plan of operation.

The DEIS could also mandate specific sums of mitigation payments to schools, police, health care, pollution control agencies and other agencies that must police and serve the mine and its work force. For instance, in many cases Wyoming and Alaska jurisdictions explicitly require industries to pay for many expansions of public services out of its own pocket as an up-front development cost.

Wyoming, for instance, has an industrial siting commission that calculates the mitigation payments required for the construction work force impacts by new projects. Recent mine expansions in Green River, Wyoming were required to pay \$112,000 to area schools to mitigate the increased enrollment from its construction work force.

Lacking appropriate mitigation, the DEIS should list the economic and social consequences of an imported construction



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labor force (and imported mine work force) to be an unmitigated significant impact on all social services.

#### **MANCAMP**

The DEIS should also consider the impact of inappropriate actions by persons associated with the proposed project. This includes vandalism and poaching, taking of fish and wild life, materials spills and adverse actions by vendors supplying hazardous materials to the project.

This is particularly important regarding this project if there is a proposed mancamp. At other mine sites in Nevada, mancamps and widespread camping out by transient construction work forces contributed to widespread poaching and killing of wildlife, and vandalism and degradation of formerly secluded natural areas that are inappropriate for extended human habitation.

#### **LOCAL PAYROLL AND LOCAL SPENDING**

The DEIS should use variations of the following calculations to determine the financial strain on public services caused by an imported construction work force.

A locally hired construction work force spends 95% of its income in the local economy. This would multiply the favorable economic impact. In contrast, an imported work force spends only about one-half its income locally. So in comparison, an imported work force would reduce local spending and decrease the economic benefit of the construction phase of the proposed project.

The DEIS for the recent Barrick mine expansion in Nevada estimates that 70% of that mine's peak construction work force would be from out of state. Assume a similar percentage for the Mine's construction work force.

#### **SCHOOLS**

If out-of-state workers arrive for the proposed project, 70% of them will be married, 50% will bring their families, who will have an average of 1.5 children. Many additional children may be placed in local schools. It may cost the school system an additional thousands of dollars per child per school year to educate these children. This means that the out of state work

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force will cause an annual financial impact on the local schools.

This increase in enrollment may force capital expansion of the school system. Expanding the capital expansion of a school system costs \$9000 per additional student who enrolls in already overcrowded schools. If the schools in the project area are overcrowded and forced to expand, they will be forced to spend large sums to accommodate the importation of families by an out of state work force. It is appropriate to consider the peak construction labor force in this calculation because the schools must meet this peak load of students.

In Challis, Idaho, for instance, community tax dollars were spent to build a junior high school that was boarded up when the construction boom (involving many TIC workers) from the Cyprus Thompson mine ended. Eureka, Nevada experienced a 50% increase in school enrollment from 1988-89 in part because of an influx of the children of mine construction workers, many from TIC. In Salmon, Idaho, according to county commissioner Quinton Snook, "(W)e built the new high school figuring the Cobalt (mine) money would pay for it. Then Cobalt dies and the taxpayers picked up the tab." (Post-Register, Idaho Falls, Idaho, 7/23/89)

#### **REDUCED WELFARE AND UNEMPLOYMENT PAYMENTS**

The imported workers will take jobs that could have been filled by local, unemployed workers. Local unemployed workers could have been taken off the welfare and unemployment rolls instead. The predominantly imported work force will cost government coffers about \$1.6 million in additional unemployment payments to local workers who stay unemployed. There is also an increased cost in continued welfare payments to unemployed local workers that should be calculated in the DEIS.

#### **INCREASED IMPACT ON HEALTH CARE PROVIDERS**

Many of these imported construction workers will seek medical care at local health care facilities. To illustrate this possible impact, in one 14 month period, there were 101 injured construction workers who filed workers compensation claims from the Cyprus Thompson mine job in Custer County, Idaho. These numbers indicate there may be many injured workers from the proposed construction work force who seek care. Local hospitals will be stretched thin.



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Many workers may have no health care at the start of a construction job. If they are hurt, who will pay? The hospital or physician who treats these workers may end up passing the costs of that unpaid treatment on to the taxpayers and the paying customers of the hospital or doctor.

#### FINANCIAL IMPACT ON HEALTH CARE PROVIDERS

Any imported construction workers at this mine will have 50 spouses and 76 children. The national average for one person's annual medical care is \$2000. Assuming the construction work force and their families require one-half this amount of health care, and 15% of this group lacks health insurance, then local health care facilities must provide thousands of dollars in potentially uncompensated medical assistance to this group.

The DEIS should set out mitigation payments to local health care facilities for treatment of these temporary construction workers and their families.

#### FINANCIAL IMPACT ON THE BLM

The preparation of the EIS and the policing of the mine operations by the BLM will require a large commitment of BLM staff. The cost of this commitment should be stated in the DEIR/EIS, and borne by the applicant to mitigate the adverse financial impact on this public agency.

#### MINE CLOSURE

How will the mine closure affect local employment, economics, transportation, housing, public utility service, social services, local state and federal government, public government services, and schools? What will be done to mitigate any of these negative impacts?

The EIS should contain a chart showing changes in the total numbers and percentages of the employment and unemployment rate for the entire workforce of the counties surrounding the Mine, and also for the construction and mine workforce. Other charts should show changes in the numbers of children in the local schools, and changes in the crime rates, for nearby cities and the surrounding counties. All these charts should provide yearly totals over the last ten years.



Research on July 20, 1995, which shall be considered the filing date for purposes of the act.

Interested persons may submit relevant information on the application to the Dockets Management Branch (address above) in two copies (except that individuals may submit single copies) and identified with the docket number found in brackets in the heading of this document. These submissions may be seen in the Dockets Management Branch between 9 a.m. and 4 p.m., Monday through Friday.

The agency encourages any person who submits relevant information on the application to do so by September 8, 1995, and to provide an additional copy of the submission directly to the contact person identified above, to facilitate consideration of the information during the 30-day review period.

This notice is issued under the Federal Food, Drug, and Cosmetic Act (sec. 802 (21 U.S.C. 382)) and under authority delegated to the Commissioner of Food and Drugs (21 CFR 5.10) and redelegated to the Center for Drug Evaluation and Research (21 CFR 5.44).

Dated: August 14, 1995.

**Stephanie R. Gray,**

*Director, Office of Compliance, Center for Drug Evaluation and Research.*

[FR Doc. 95-21379 Filed 8-28-95; 8:45 am]

BILLING CODE 4160-01-F

## DEPARTMENT OF THE INTERIOR

### Bureau of Land Management

#### Prepare an Environmental Impact Statement/Environmental Impact Report (EIS/EIR) Analyzing the Impacts of a Proposed Expansion of the Castle Mountain Mine, San Bernardino County, California

**AGENCY:** Bureau of Land Management, Interior.

**ACTION:** Amendment to the Notice of Intent to Prepare the Castle Mountain Mine EIS/EIR.

**SUMMARY:** Notice is hereby given that the Bureau of Land Management (BLM) is amending the Notice of Intent published in the Federal Register on Tuesday, July 18, 1995, (Volume 60, Number 137) regarding the preparation of an EIS/EIR for a proposed expansion of the Castle Mountain Mine in San Bernardino County, California. BLM is extending the public comment period for 30 days, and will accept comments pertaining to preparation of the draft EIS through Wednesday, September 27,

1995, due to the widespread public interest in the proposed expansion.

**ADDRESSES:** Written comments should be addressed to the Bureau of Land Management, Needles Resource Area, 101 West Spikes Road, Needles, California 92363.

#### FOR FURTHER INFORMATION CONTACT:

For additional information regarding the preparation of the EIS contact George R. Meckfessel, Planning and Environmental Coordinator at (619) 326-3896.

Dated: August 22, 1995.

**Henri R. Bisson,**

*District Manager.*

[FR Doc. 95-21252 Filed 8-28-95; 8:45 am]

BILLING CODE 4310-40-M

[NM-930-1310-01; TXNM 88192]

#### Proposed Reinstatement of Terminated Oil and Gas Lease; New Mexico

**AGENCY:** Bureau of Land Management, Interior.

**ACTION:** Notice.

**SUMMARY:** Under the provisions of Public Law 97-451, a petition for reinstatement of Oil and Gas Lease TXNM 88192, Sabine County, Texas, was timely filed and was accompanied by all required rentals and royalties accruing from March 1, 1995, the date of termination. No valid lease has been issued affecting the land. The lessee has agreed to new lease terms for rentals and royalties at rates of \$10.00 per acre, or fraction thereof, and 16 $\frac{2}{3}$  percent, respectively. Payment of a \$500.00 administrative fee has been made. Having met all the requirements for reinstatement of the lease as set in Section 31 (d) and (e) of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 188 (d) and (e)), the Bureau of Land Management is proposing to reinstate the lease effective March 1, 1995, subject to the original terms and conditions of the lease and the increased rental and royalty rates cited above, and the reimbursement for cost of publication of this Notice.

**FOR FURTHER INFORMATION CONTACT:** Lourdes B. Ortiz, BLM, New Mexico State Office, (505) 438-7586.

Dated: August 21, 1995.

**Lourdes B. Ortiz,**

*Land Law Examiner.*

[FR Doc. 95-21421 Filed 8-28-95; 8:45 am]

BILLING CODE 4310-FB-M

[NM-930-1310-01; TXNM 88191]

#### Notice of Proposed Reinstatement of Terminated Oil and Gas Lease; New Mexico

**AGENCY:** Bureau of Land Management, Interior.

**ACTION:** Notice.

**SUMMARY:** Under the provisions of Public Law 97-451, a petition for reinstatement of Oil and Gas Lease TXNM 88191, Sabine County, Texas, was timely filed and was accompanied by all required rentals and royalties accruing from March 1, 1995, the date of termination. No valid lease has been issued affecting the land. The lessee has agreed to new lease terms for rentals and royalties at rates of \$10.00 per acre, or fraction thereof, and 16 $\frac{2}{3}$  percent, respectively. Payment of a \$500.00 administrative fee has been made. Having met all the requirements for reinstatement of the lease as set forth in Section 31 (d) and (e) of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 188 (d) and (e)), the Bureau of Land Management is proposing to reinstate the lease effective March 1, 1995, subject to the original terms and conditions of the lease and the increased rental and royalty rates cited above, and the reimbursement for cost of publication of this Notice.

**FOR FURTHER INFORMATION CONTACT:** Lourdes B. Ortiz, BLM, New Mexico State Office, (505) 438-7586.

Dated: August 21, 1995.

**Lourdes B. Ortiz,**

*Land Law Examiner.*

[FR Doc. 95-21420 Filed 8-28-95; 8:45 am]

BILLING CODE 4310-FB-M

[AZ-055-05-1820-01; AA-25117]

#### Arizona: Notice of Realty Action; Lease of Public Lands for Airport Purposes in La Paz County, Arizona

**AGENCY:** Bureau of Land Management, Interior.

**ACTION:** Notification of public lands for airport purposes lease.

**SUMMARY:** The following described public lands in La Pa County, Arizona, have been examined and found suitable for lease under the provisions of the Act of May 24, 1928 (49 U.S.C. Appendix 211-213). The Town of Quartzsite proposes to use the land for a Community Airport.

**Gila and Salt River Meridian, Arizona**

T. 4N., R. 18 W.,

Sec. 19, All lands lying south of Interstate Highway 10;



**APPENDIX C**  
**CASTLE MOUNTAIN PROJECT STIPULATIONS**

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Attachment 1

CASTLE MOUNTAIN PROJECT - STIPULATIONS

Viceroy or any new operator that succeeds to Viceroy's interest by sale, assignment, transfer, conveyance, exchange or other means (hereinafter referred to as "the Operator") must comply with the following stipulations:

1. Any significant change in the Plan of Operation by the Operator, as modified by stipulations developed as a result of the review process, will require review and approval in the same manner as the initial Plan of Operation. The U.S. Department of the Interior, Bureau of Land Management ("the BLM") may review and request modification of any operation approved in the Plan of Operation, as modified, that is causing unnecessary or undue degradation in accordance with the regulations at 43 CFR 3809.1-7.
2. This approval is conditioned upon the Operator obtaining all necessary county, State, or Federal permits and complying with all applicable local, State and Federal laws and regulations.
3. The Operator shall meet all of the requirements of the Regional Water Quality Control Board's ("RWQCB") Waste Discharge Order and make all monitoring data available to the BLM upon request.
4. The Operator shall meet all applicable permit requirements and conditions of the San Bernardino County Air Pollution Control District ("SBC-APCD").
5. The Operator shall comply with all of the reclamation and other requirements set forth in the August, 1990, Mine Plan and Reclamation Plan for the Castle Mountain Project (the "Reclamation Plan").
6. Before starting mining operations, the Operator shall post a \$619,000.00 letter of credit, cash, or surety bond jointly with the County of San Bernardino ("the County") and the BLM, to ensure compliance with all of the conditions of the Plan of Operations and Reclamation Plan. That bond amount shall be reviewed for adequacy at an initial review meeting which initial review meeting, shall take place as set forth in the Reclamation Plan, and thereafter at two (2) year intervals. The bond amount shall be adjusted as set forth in detail in the Reclamation Plan. Portions of the bond shall be released to the Operator upon certification by the BLM and the County that all reclamation conditions applicable to a given reclamation area have been complied

with, as specified in detail in the Reclamation Plan. The County has agreed to administer the bond, subject to Regulation No. 21(1)(2). Within 30 days following the release of this decision, the BLM, County, and the operator will begin developing an agreement to design and implement the administrative bonding procedures.

7. A monthly report on cyanide-related animal mortalities must be submitted to the BLM Needles office no later than the 10th of each month. This report shall include the following information:
  - a. The number and kind of each mortality attributed to cyanide. "Kind" will be reported under one of the following categories: raptors, songbirds, upland game birds, waterfowl, shore birds, mammals and other;
  - b. Location where the dead animal was found; and
  - c. Other information as requested by the BLM.
8. All structures and facilities shall meet applicable seismic building safety standards. [DEIS p. 6.2-1.]
9. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. [DEIS p. 6.2-1.]
10. Protore shall be separated in the overburden pile to the extent practical. [DEIS p. 5.2-4.]
11. The Operator shall contract an individual qualified in the assessment of woodrat middens to inventory the project site for these resources before initiating the operation. If located, middens would be assessed for potential paleontological value, extracted at the discretion of BLM and County, and then stored at an approved repository. [DEIS p. 6.2-1.]
12. Project water requirements shall be minimized by the following operational procedures: [FEIS Section 4.1.5.4.]
  - a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.
  - b. Employing drip irrigation to distribute solution directly to the heap leach surfaces; use of sprinkler systems during the operational phase of each leach pad is prohibited.



13. The Operator shall comply with the "Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring" (August 1990) which requires: [FEIS Section 4.1.5.1.]
- a. Two additional groundwater monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.
  - b. Water levels in monitor wells W-3, W-19, W-37, W-38, and PS-2 and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are monitored during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Operator.
  - c. In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation.
  - d. In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and other information shall be submitted to BLM for its consideration and decision as to whether additional mitigation measures are necessary.
  - e. BLM's decision as to whether additional mitigation measures are necessary, such as the provision of supplemental source of water for Piute Spring to ensure no adverse impacts to riparian habitat, shall be circulated for public review and comment prior to implementation.
  - f. If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Operator shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan.
14. Groundwater extraction shall be recorded at each well with flow meters. [DEIS p. 6.3-2.]

15. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Operator shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIS p. 6.3-2.]
16. The heap leach piles shall be constructed to avoid disruption of the large drainage that passes through the western portion of the project site. Minor drainages that would be restricted by heap pad construction shall be diverted around the heap piles. Facilities shall be constructed to avoid major drainages. [DEIS p. 6.3-2, and FEIS at p. S-10.]
17. The Operator shall obtain a Section 1603 permit from the California Department of Fish and Game before altering any stream channels. [DEIS p. 6.3-1.]
18. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIS p. 6.3-2.]
19. The Operator shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including: [DEIS p. 6.3-1]
  - a. Impermeable synthetic liners for process solution basins and heap leach pads.
  - b. Sealed drainage and collection facilities to transport or contain leaching solution.
  - c. Diked leach pads to confine and control drainage from the leach piles.
  - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and draindown of solution from the leach pads in the event pumps could not operate because of a power failure.
  - e. Drainage or diversion ditches outside the heap leach system to preclude entry of storm run-off into the system.
  - f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.



- g. Regularly prepared monitoring reports on the current status of operations.
  - h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion.
20. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion in accordance with the Reclamation Plan. [DEIS p. 6.3-2.]
21. Within one year of the approval of the Plan of Operation, the Operator shall develop a revegetation research program based upon information provided by a qualified expert in desert flora. This research program shall include, but not be limited to the following measures: [DEIS p. 6.4-2; FEIS Section 4.1.4.2.]
- a. Review of available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.
  - b. Development of a research methodology and a schedule for implementation of the revegetation program for submittal to BLM and the County.
  - c. Revegetation success shall be determined by measuring the density and diversity of perennial species. The ten year goal for density, using only perennial species, will be 21% as compared to undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be 6% of the control. The ten year goal for diversity will be 15% using only perennial species, expressed as a similarity index of the control. The five year goal for diversity, based on a sigmoidal curve, will be 4%, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly distributed plots located within areas representative of the reclaimed lands.
  - d. Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall be initiated to determine where available soil would be most effectively used.
  - e. Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept

in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.

- f. Selection of a site appropriate for a nursery. Considerations will include water availability, access, and other requirements determined by the revegetation experts.
- g. A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. The goal will be to initiate revegetation procedures within six months following completion of project activities over an area.
- h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the Project Site, a weed control program acceptable to the County and BLM shall be implemented.
- i. Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.
- j. Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.
- k. Ground preparation procedures shall include ripping and harrowing of compacted soils.
- l. Implementation of a monitoring program to verify revegetation results, based upon the goals for diversity and density:
  - (1) The revegetation bond for any specific area will not be released until the Operator demonstrates, based on a full 10 years of monitoring of the revegetation of that area, including at least one full year in which the vegetation is completely self-sufficient, that the density and diversity standards set forth in Stipulation No. 21(c) have been met.
  - (2) Upon the completion of the monitoring period set forth in Stipulation No. 21(1)(1) for each specific area to be revegetated, the BLM/County shall determine the extent to which the density and diversity standards set forth in Stipulation



No. 21(c) have been met. If the Operator has not met the standard for density, the BLM/County shall retain an amount from the reclamation bond equal to .5 percent of the funds allocated in such bond for such specific area for every .05 percentage point contained in such standard by which the Operator has not met such standard. If the Operator has not met the standard for diversity, the BLM/County shall retain an amount from the reclamation bond equal to .5 percent of the funds allocated in such bond for such specific area for every .05 percentage point contained in such standard by which the Operator has not met such standard. The balance of the funds contained in the reclamation bond and allocated to such specific area shall be returned to the Operator. [See Attachment 2 for illustration of how this stipulation would be applied.]

22. Baseline vegetation measurements shall be completed as part of the revegetation research program prior to surface disturbing activities. [FEIS Section 3.2.1.]
23. The Operator shall annually provide to the BLM a detailed description of the experiments performed and results achieved in connection with its revegetation research program and will further describe the progress of all revegetated areas.
  - a. As a result of its review of the information provided by these reports, the County or BLM may adjust the revegetation standards.
  - b. If the BLM determines that such adjustment is warranted, it will provide notice.
  - c. By May 1 of the seventh and tenth years of mining operation, the BLM will issue a public notice of its determination as to whether or not adjustment of the revegetation standards is warranted, providing its rationale for this determination.
24. The Operator is contemplating the establishment of a Revegetation Review Committee. Within 30 days following receipt of all permits and approvals, the Operator shall advise the BLM of its decision regarding the establishment of a Revegetation Review Committee. If such a group is established, the Operator shall prepare a detailed plan describing the structure, membership selection procedures, and functions of the Committee that will be mutually agreeable to BLM, the County, the operator, California Division of Mines and Geology and three representatives of the environmental community. The plan would incorporate the following:

- a. The Committee would consist of three technical experts, including an arid lands revegetation expert, a geologist/hydrologist and an arid lands ecologist; three representatives of the environmental community; and one representative each of the County, the BLM, the State Division of Mines and Geology, and the Operator.
  - b. The Committee would confer annually to discuss the annual revegetation reports filed by the Operator, in order to: interpret the information contained in these reports; advise the County and BLM of actions they might take to increase the success of revegetation efforts and adjustments which should be made to the revegetation standards.
  - c. The Committee would produce a written report by June 1 of each year.
  - d. The Operator would make provision for the reimbursement to Committee members of the costs associated with participation in the Committee.
- 25. Revegetation efforts shall be initiated as soon as practicable during the project operation period, as use of specific disturbed areas is completed. [DEIS p. 6.4-3.]
  - 26. The project revegetation program shall collect and provide data on revegetation and recovery of the on-site desert grassland unusual plant assemblages (UPA) and provide such data to BLM to supplement UPA monitoring and planning strategies. [DEIS p. 6.4-3.]
  - 27. Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM. [DEIS p. 6.4-3.]
  - 28. Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed, instead of bulldozed, to enhance recovery. [FEIS Section 3.2.1.]
  - 29. Concerning the on-site location of the Stephen's Beardtongue (*Penstemon stephensii*) population the following measures shall be required: [FEIS Section 3.2.1.]
    - a. Flag, fence, sign, or otherwise delineate the on-site population, or other discovered populations to ensure avoidance during project construction and operations.
    - b. Monitor the known population and other individuals/populations that are found during project operations.



- c. If individuals do not appear elsewhere on-site, collect and broadcast seed from the known population to other on-site areas, or transplant individuals to another location, before reclaiming mine exploration drill roads.
- 30. Road segment A of the Mitigated Access Route shall, to the extent possible, use the existing alignment of the YKL Ranch water pipeline maintenance road for access to Nevada State Route 164. [FEIS Section 3.2-1.]
- 31. Fencing shall be used to exclude livestock from revegetated areas until termination of the project and maturation of the revegetated areas, such that grazing can be accommodated. The Operator shall be responsible for removing these fences following reclamation, as determined by BLM. [DEIS p. 6.4-3; FEIS Section 3.2.1.]
- 32. A program to educate employees about area wildlife shall be implemented by the Operator in connection with the safety program. The program shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or interfering with wildlife, especially the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations. [DEIS p. 6.5-2.]
- 33. An environmental specialist or contracted consultant shall be employed by the Operator to monitor the effectiveness of wildlife mitigation measures and the revegetation program. Results shall be reported to BLM and County monthly as concerns wildlife measures and annually concerning the revegetation program. [DEIS p. 6.5-2; SDEIS p. E-24.]
- 34. Measures to isolate cyanide processing solutions from wildlife have been incorporated into project design plans. Specific measures to be employed shall be tested for their effectiveness in an ongoing evaluation program after commencement of operations. [DEIS p. 6.5-3; SDEIS p. 3-28; and FEIS Section 3.2.1.]
  - a. The Solution Storage Area shall:
    - (1) Utilize steel storage tanks.
    - (2) Be designed so that solutions are unavailable to wildlife.

- (3) Include fencing of and netting over the emergency storage basin, designed to preclude access by birds and bats.
- (4) Employ hazing techniques if process solution enters the stormwater storage basin.
- (5) If avian entanglement becomes a problem, the operator will replace the netting over the emergency storage basin with a different type of net or will implement another method to prevent entanglement.

b. Heap Leach Piles

- (1) Active heap leach pads shall be surrounded by chain-link fencing.
- (2) Drip irrigation methods shall be used to distribute solution directly on the heaps, including both the tops and sides, in order to minimize potential ponding of water available to birds or other animals.

c. Solution Handling

The cyanide solution system shall be operated as a closed circuit, with solution transported from heap piles to storage tanks, to processing plant, and back to the heap piles in a system of pipes, rather than open ditches. Open ditches will be used only to carry heavy storm run-off.

- 35. Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times. [FEIS Table 3.1.]
- 36. The Operator shall locate and flag on-site tortoise burrows before initiating surface disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and FWS. [DEIS p. 6.5-3.]
- 37. The Operator shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status. [DEIS p. 6.5-3; FEIS Appendix G, and Biological Opinion, p. 9.]
- 38. A project sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented. [DEIS p. 6.5-3.]



39. The easterly segment of the Mitigated Access Route shall use an alignment along the western flank of Piute Valley known as the YKL Ranch Maintenance Road. Any tortoise burrows located within the alignment of new road construction shall be flagged and if tortoises are present, they shall be removed according to procedures acceptable to BLM and FWS. [FEIS Table 3.1, p. 3-14.]
40. Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife. [DEIS p. 6.5-5.]
41. Power lines shall be constructed in a manner to discourage raven nesting/roosting. [FEIS Section 3.2.1, and Table 3.1.]42. As part of the on-site biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven population numbers are occurring. [DEIS p. 6.5-5.]
43. Subject to BLM approval of reclamation procedures and completion of public road abandonment procedures to be implemented by Clark County, Nevada, the Operator shall reclaim County Road A68p for use as an equestrian trail. The Operator shall berm and fence both terminus points of County Road A68p to deter vehicular access. [SDEIS Section 3.2.1.4; FEIS Section 3.2.2.]
44. The Operator shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U. S. Fish and Wildlife Service's Biological Opinion. [FEIS Section 3.2.1, Appendix G.]
45. Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity. [DEIS p. 6.5-4.]
46. The wildlife guzzler (#B-79) located northwest of the project site shall be relocated in an appropriate location as determined by BLM. [FEIS Section 3.2.2.]
47. An examination of former mine shafts and adits shall be completed prior to earth moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed during the winter hibernating period by an ecologist familiar with bat fauna. If a colony is found, or substantial use by individual bats is indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by a colony will be required for project development, a mitigation program shall be completed. [DEIS p. 6.5-5.]

48. To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress. [DEIS p. 6.5-5.]
49. Design and construction of electric power distribution poles shall incorporate provisions for raptor safety. [DEIS p. 6.5-5.]
50. Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement. [FEIS Section 3.2.1.]
51. A number of measures shall be incorporated into the project design to control the generation of PM10 particulates. They include: [DEIS p. 6.6-1; SDEIS p. 3-29.]
  - a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.
  - b. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.
  - c. Speed restrictions of 35 mph or less shall be enforced on mine roads to minimize surface disturbance of the roadways.
  - d. Vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.
  - e. Vehicle travel to and from the project site shall be reduced by the promotion of van pools/busing for workers.
  - f. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the SBCAPCD for review before use. The debris collecting devices shall have a minimum design efficiency of 90 percent.
  - g. The live storage portion of the coarse ore stockpile shall be covered to minimize windblown dust.
  - h. Blasting during high winds shall be minimized or curtailed to minimize windblown dust.



- i. The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind blown dust.
  - j. Dust suppression for secondary/tertiary ore crushing operations shall be controlled using baghouses constructed to specifications acceptable to the SBC-APCD.
52. Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring revegetation until operations are completed. [DEIS pp. 3.2-48 to 3.2-53.]
53. As required by the SBC-APCD, PM10 concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to the SBC-APCD to demonstrate that the project is not violating ambient air quality standards. [DEIS p. 6.6-2.]
54. Permanent on-site power shall be generated using propane or natural gas generators. [SDEIS p. 3-29.]
55. Emissions from mobile equipment and vehicular engines shall be controlled by: [DEIS p. 6.6-3.]
- a. Using only low sulfur fuels.
  - b. Implementing a routine maintenance program to avoid operating inefficiencies.
  - c. Using busing/van pooling.
56. Hydrogen cyanide shall be routinely monitored at the processing facilities as a requirement of the employee health and safety plan implemented according to MSHA Regulations. In addition, the Operator shall periodically perform airborne HCN surveys to verify that potential public exposure to cyanide is inconsequential. [DEIS p. 6.6-3.]
57. A spill prevention, control, and countermeasures plan shall be developed to establish procedures for spill prevention and cleanup. [DEIS p. 6.7-1.]
58. A vehicle shall be on-site for emergency response in the event of an accident. The Operator shall maintain first aid and fire suppression equipment on-site. Procedures for emergency response shall be developed for use in the event of an accident. [DEIS p. 6.7-2.]

59. Personnel trained in security shall be on-site on a 24 hour basis to deter entry to potentially hazardous areas by unauthorized persons. [DEIS p. 6.7-2.]
60. Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures. [DEIS p. 6.7-2.]
61. Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting. [DEIS p. 5.7-1.]
62. The Project shall comply with applicable MSHA standards to achieve a safe working environment. Rules and regulations of County Department of Environmental Health Services (DEHS) shall be followed to assure that no significant public health hazard would be created. [DEIS p. 5.7-1.]
63. Fences, and earthen berms to block vehicular access into open pit areas, shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. [DEIS p. 5.7-7.]
64. Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed off-site by a contracted hauler. [DEIS p. 5.7-5.]
65. Non-hazardous waste materials generated on the site shall be disposed at approved facilities. Waste oils shall be recycled. Other hazardous wastes shall be disposed off-site, using services and procedures approved by the California Department of Health Services and the U. S. Environmental Protection Agency. [DEIS pp. 6.7-1, 6.7-2.]
66. Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications. [DEIS p. 5.7-5.]
67. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials. [DEIS p. 5.7-6.]
68. Lime, sodium hydroxide, or other alkaline material shall be added to the cyanide solution to reduce the potential for emitting hydrogen cyanide. [DEIS p. 5.7-2.]
69. The Operator shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted. [DEIS p. 6.7-2; FEIS Section 3.2.]



70. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIS p. 6.7-2.]
71. To minimize the degree to which they are seen from sensitive viewpoints: a) the overburden pile shall be located on an outwash slope bounded by small hills; and b) heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor.[DEIS p. 6.8-1.]
72. Operation structures and the solution storage tanks shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County. [DEIS p. 6.8-2.]
73. Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period. [DEIS p. 6.8-2.]
74. Upon Project completion the Operator shall remove all operating facilities, including structures, equipment, transmission lines, and fencing, in conformance with the Reclamation Plan requirements. [DEIS p. 6.8-2.]
75. Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight line geometrics and potential contrast in form and line. [DEIS p. 6.8-2.]
76. Rock staining solutions shall be used on the upper mine pit walls. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes. [DEIS p. 6.8-2.]
77. Revegetation shall include some areas within the project boundary and along access roads that were disturbed by the actions of third parties before reclamation of such disturbances was required under the Federal Land Policy Management Act (FLPMA) and the California Surface Mining and Reclamation Act (SMARA). Clay pits shall be reclaimed using overburden, with rock staining of the upper pit wall of the clay pit on Big Chief Hill. The Operator shall incorporate reclamation of the adjacent North Clay Pit, located off-site, into the Reclamation Plan. [DEIS p. 6.8-2; FEIS Sections 3.2.1, and 3.2.2.]
78. The Operator shall comply with all of the reclamation requirements set forth in the Reclamation Plan including, but not limited to, instituting the required revegetation program. Revegetation shall use native plants common to the area. [DEIS p. 6.8-2.]

79. Field work, laboratory studies, and documentation of research results shall be conducted for the five aboriginal sites (CA-SBr-5705, -5706, -5707, 5708, and -6055) located in the vicinity of the Mitigated Access Route and the project operations area. Comments submitted by local Native American representatives pertaining to these sensitive areas shall be considered in the evaluation process and artifacts of religious value made available through the BLM to qualified Native Americans for religious ceremonies. Pursuant to State and Federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson City, or its designate. [DEIS p. 6.9-1; and FEIS Appendix H.]
80. The Operator shall construct a chain link fence, with no gate, around the Hart townsite cemetery and post a descriptive sign within the fence. [DEIS p. 6.9-3.]
81. The Operator shall implement an informational program for employees to increase their awareness of the value of cultural resources and the need for their preservation. This program shall be achieved by providing a section on the prehistory and history of the project area in the employee manual. The section shall stress the fragility of the archaeological record and the responsibility of employees in preserving these resources. The manual shall be updated, as necessary to reflect new research findings which may occur relative to the history and prehistory of the area. [DEIS p. 6.9-3.]
82. Access roads to areas of high cultural resource sensitivity in the project's vicinity shall be closed or rerouted. [DEIS p. 6.9-3.]
83. The Operator shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by BLM. [DEIS p. 6.10-1.]
84. Grazing lessees shall be compensated by the Operator for livestock killed or injured by vehicles driven by project employees. [DEIS p. 6.10-2.]
85. Cattleguards shall be installed and maintained by the Operator at points where cattle control fences cross the access roads. [DEIS p. 6.10-2.]
86. If project activities inhibit use of watering facilities by cattle, the Operator shall provide alternate water sources, in accordance with BLM requirements. [DEIS p. 6.10-2.]
87. At the discretion of BLM, the abandoned tank, troughs, and corral in Section 23 shall be removed and disposed of by the Operator. [DEIS p. 6.10-2.]



88. The Operator shall provide a viewpoint at the Castle Mountain Project site, describing past and present gold mining operations in the area. The interpretive site will be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. The site shall include descriptive information about the permitting process, agencies involved in that process, measures taken to protect the environment, current mining operations, and the history of the Hart Mining District. This descriptive information shall be approved by the BLM. [DEIS p. 6.10-2.]
89. An historical marker shall be placed along the Mitigated Access Route at a location where the railroad bed of the former Barnwell and Searchlight Railroad is noticeable. The marker shall include a brief description of the history of the railroad. [DEIS p. 6.10-2.]
90. Project site access routes shall be limited to the Project's operational period. Public use shall be discontinued following road reclamation.
91. Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles. [DEIS p. 5.7-8]
92. At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) overall for the overburden pile and 2.5:1 overall for the heap leach piles. Final slopes shall be contoured as provided for in the Reclamation Plan sections 1.8 and 1.10.
93. Pit walls shall be constructed in accordance with the standards of the Mine Safety and Health Administration.

## Attachment 2

### ILLUSTRATION OF BONDING REQUIREMENTS, STIPULATION

The revegetation component of the bond for each specific area would be split into two equal parts, one-half to be associated with the density goal, the other half to be associated with the diversity goal. In other words, the two goals would be treated separately, rather than combined. For each 0.05 percentage point that the actual result fell short of achieving the density or diversity goal for a specific area, an amount equal to 0.5 percent of the funds allocated for that area would be forfeited. The following illustrates how these requirements would be implemented under various assumptions. The calculations are based on data from the Reclamation Plan as follows:

Density goal 21% (see Recl. Plan page 1-24)  
Diversity goal 15%  
Revegetation bond \$1,500 per acre (see Recl. Plan page 3-5, item 13)

Assuming a parcel of land covering 10 acres, the revegetation component of the bond would be:

10 acres @ \$1,500/acre = \$15,000, of which:  
Density portion: \$7,500  
Diversity portion: \$7,500

Case A: After the monitoring period for this parcel, if revegetation of this specific area had only achieved 17% for density, and 12% for diversity, the amount of bond money forfeited would be:

Density:  $\$7,500 \times 0.005/0.0005 \times (0.21 - 0.17) = \$3,000$   
Diversity:  $\$7,500 \times 0.005/0.0005 \times (0.15 - 0.12) = \$2,250$

Case B: After monitoring period for this ten acres, if revegetation of the specific area had only achieved 12% for density, and 9% for diversity, the amount of bond money forfeited would be:

Density:  $\$7,500 \times 0.005/0.0005 \times (0.21 - 0.12) = \$6,750$   
Diversity:  $\$7,500 \times 0.005/0.0005 \times (0.15 - 0.09) = \$4,500$

Case C: After the monitoring period for this parcel, if revegetation of the specific area had achieved 15% for density, but only 4% for diversity, the amount of bond money forfeited would be:



Density:  $\$7,500 \times 0.005/0.0005 \times (0.21 - 0.15) = \$4,500$   
Diversity:  $\$7,500 \times 0.005/0.0005 \times (0.15 - 0.04) = \$8,250^*$

\* The diversity component forfeited would be limited to \$7,500, the amount posted for revegetation bonding for the diversity goal for this specific parcel.

Forfeited amounts would be retained by BLM and the County under their joint bonding arrangement.





**APPENDIX D**  
**CASTLE MOUNTAIN PROJECT**  
**CONDITIONS OF APPROVAL**

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## CONDITIONS OF APPROVAL

VICEROY GOLD CORPORATION  
SAMR/88-003/DN585-1145N  
CASTLE MOUNTAIN PROJECT  
September 1990

### MINING/RECLAMATION

#### GENERAL ON-GOING CONDITIONS:

1. This conditional use approval is for the establishment of Mine Plan and Reclamation Plan No. 90M-013 (hereafter "Mine/Reclamation Plan") for the Castle Mountain Project. The Project is an open pit gold mine operation on 115 acres of patented mining claims and a reclamation plan on the entire 2,735 acre project site located approximately 100 miles east of Barstow, California. A copy of these Conditions, the Mine/Reclamation Plan, the Mitigation Compliance Program, and the Plan for Groundwater Monitoring and Contingency Water Supply for Piute Spring shall be kept on site during the operation.
2. The Mine/Reclamation Plan shall be effective for a maximum of 18 years, expiring on December 31, 2008. The Conditional Use Permit shall be in effect as long as the Mine/Reclamation Plan is valid and the operation is in compliance with the Mine/Reclamation Plan and Conditions of Approval.
3. The San Bernardino County Planning Officer shall be notified in writing, within 30 days, about any:
  - a. Changes in operating procedures, or inactive periods of operation in excess of one (1) year.
  - b. Changes of company ownership or address during the life of the Conditional Use Permit and Mine/Reclamation Plan.
  - c. Any changes in ownership of the property that will affect the approved Mine/Reclamation Plan.
4. If the mining, reclamation, or operating procedures change from those outlined in the Mine/Reclamation Plan, an amendment shall be filed and approved before such changes are made effective.

\*NON-STANDARD CONDITION

\*\*ENVIRONMENTAL MITIGATION MEASURE

5. The mining operation shall be conducted in a uniform manner, with exterior slopes and floors trimmed as the mining operation proceeds. Excavation shall be conducted so as to leave them in a reasonably neat and trim manner. Final pits shall be excavated and trimmed as per the approved Plot Plan.
- \*\* 6. At project decommissioning, final slopes shall be 2:1 (horizontal to vertical) overall for the overburden pile and 2.5:1 overall for the heap leach piles. Final slopes shall be contoured as provided for in the Mine/Reclamation Plan sections 1.8 and 1.10.
7. Pit walls shall be constructed in accordance with the standards of the Mine Safety and Health Administration.
8. The permittee shall maintain the mine site and premises in a neat and orderly manner at all times. No refuse shall be maintained at any time in pit excavations, channel ditches or work areas. All trash shall be disposed of at an approved sanitary landfill site.
9. At the time of project decommissioning, all equipment, buildings, structures and refuse shall be removed from the site, all hazards mitigated, and reclamation completed per the approved Mine/Reclamation Plan.
10. In compliance with San Bernardino County Ordinance #2684, the Applicant shall agree to defend at its sole expense any action brought against the County, its agents, officers, or employees, because of the issuance of this approval. The Applicant shall reimburse the County, its agents, officers, or employees for any court costs and attorney's fees which the County, its agents, officers or employees may be required by a court to pay as a result of such an action. The County may, at its sole discretion, participate at its own expense in the defense of any such action but such participation shall not relieve Applicant of his obligations under this condition.
- \*\* 11. Prior to start of mining operations, Applicant shall post a \$619,000.00 letter of credit, cash, or surety bond with the County of San Bernardino ("the County") and the U. S. Department of the Interior, Bureau of Land Management ("the BLM"), to ensure compliance with all of the conditions of the Mine/Reclamation Plan. That bond amount shall be reviewed for adequacy at an initial review meeting which initial review meeting, shall take place as set forth in the Mine/Reclamation Plan, and thereafter at two (2) year intervals. The



bond amount shall be adjusted as set forth in detail in the Mine/Reclamation Plan and in the Memorandum of Understanding for Reclamation of the Castle Mountain Project ("Reclamation MOU"). Portions of the bond shall be released to the Applicant upon certification by the Office of Planning that all reclamation conditions applicable to a given reclamation area have been complied with, as specified in detail in the Mine/Reclamation Plan. The Applicant shall be notified in writing, in the manner set forth in the Reclamation MOU, concerning any reclamation violations.

12. Each year on February 1st, starting on February 1, 1991, a report reviewing the past year's mining and reclamation activity shall be filed with the Department of Land Management, Office of Planning, 3rd Floor, 385 N. Arrowhead Avenue, San Bernardino, California, 92415-0182.
- \* 13. As determined necessary on a case by case basis, the Applicant shall deposit funds with the County, necessary to compensate staff time and expenses for review of monitoring reports and possible field checks.
- \*\* 14. In the event that project-related excavation uncovers a buried paleontological or archeological deposit on any of the patented mining claims, work in the area will be halted and, at the expense of the Applicant, a qualified paleontologist or archeologist will be contacted to evaluate the significance of the find and make recommendations as to its disposition. The Applicant shall complete and fund all mitigation measures deemed necessary.

#### OFFICE OF PLANNING

15. Any identifying sign shall be constructed in compliance with the designated zone for this site.
16. All trash storage shall be maintained in closed containers.
17. This Conditional Use Permit ("CUP") shall become null and void:
  - a. Unless the use of the land authorized by such Conditional Use Permit has taken place within thirty-six (36) months after the approval of this CUP.

- b. Where circumstances beyond the control of the Applicant cause delays which do not permit compliance with the time limitation established in this section, the Planning Officer may grant an extension of time for a period not to exceed an additional thirty-six (36) months. Applications for such extension of time must set forth, in writing, the reasons for the extension and shall be filed, together with a fee established by the Board of Supervisors, with the Office of Planning, thirty (30) calendar days before the expiration of the CUP. The Applicant will be responsible for initiating any extension request.
18. The Applicant shall comply with the requirements of all State, County, and Local agencies as are applicable to the project area. These include, but are not limited to, the: County Departments of Environmental Health Services, Transportation/Flood Control, Fire Warden, Building and Safety Office; San Bernardino County Air Pollution Control District; State Fire Marshal; Colorado River Basin, Regional Water Quality Control Board; California State Lands Commission; California Department of Transportation; California Department of Fish and Game; California Division of Mines and Geology; California Occupational Safety and Health Administration; U. S. Fish and Wildlife Service; Mine Safety and Health Administration; and the BLM.

#### FORESTRY AND FIRE WARDEN

19. All new construction shall comply with applicable sections of the Uniform Fire Code, the County Development Code, and any other laws regarding fires and fire prevention adopted by the State or County.
20. All flammable vegetation shall be removed a minimum distance of thirty (30) feet from any flammable building material, including any finished structure, with the exception of the nursery. The San Bernardino County Forestry and Fire Warden emergency phone number is 800-472-2376.
- Before removing any vegetation the Applicant shall contact, and comply with, any requirements of the BLM's Needles, California office.
21. Establish and maintain an industrial fire brigade approved by the County Fire Warden. Provide fire engine, equipment, and trained personnel as approved



by the County Fire Warden.

22. Each chimney used in conjunction with any fireplace or any heating appliance in which solid or liquid fuels is used shall be maintained with an approved spark arrester as identified in the Uniform Fire Code.

OFFICE OF SURVEYOR/DRAINAGE SECTION

- \*\* 23. Adequate provisions shall be made to intercept and conduct the off-site tributary drainage flow around or through the site in a manner which will not adversely affect adjacent or downstream properties.

PRIOR TO ISSUANCE OF BUILDING PERMITS FOR THE PROCESSING PLANT AREA: (Applicable to Conditions 24-26)

OFFICE OF PLANNING

24. The Applicant shall submit the approved plot plans (brownline or original) for a Land Use Compliance Review before obtaining building permits.
25. The Applicant shall submit a detailed plant site plan showing: All building equipment, structures and road improvements, public and private. The map shall also include parking, access and handicap improvements, if applicable.
26. The Applicant shall provide plans showing that project facilities that are exposed to view (i.e., conveyor systems, processing facilities, etc.) shall be painted with colors that blend into the surrounding landscape. Project facilities, on the patented mining claims, shall not exceed 52.5 feet in height, or as approved by the County Office of Building and Safety.

PRIOR TO COMMENCEMENT OF MINING OPERATIONS: (Applicable to Conditions 27-34)

FORESTRY AND FIRE WARDEN

27. Fire hydrants must be no closer than 150 feet from propane tanks and may not be placed at the ends of the tanks.

DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES:

28. Soil testing for the sewage disposal system shall meet the requirements of the Department of Environmental Health Services. Submit test results and the appropriate fee to the Department of Environmental Health Services.

29. Test results which show potable water source quality and quantity standards shall be submitted to the Department of Environmental Health Services.

\*\* 30. The Applicant shall abate potential impacts to surface and groundwater associated with the on-site storage of fossil fuels, chemicals, explosives, reagents and use of dust binding agents by mitigations through the implementation of applicable Colorado River Basin Regional Water Quality Control Board ("RWQCB"), San Bernardino County Department of Environmental Health Services and San Bernardino County Fire Marshal regulations. Use of above ground storage tanks requires the preparation of a contingency plan for secondary containment of potential leaks to the satisfaction of the RWQCB and the County Department of Environmental Health Services, including the following:

■ A containment area designed to accommodate the volume of the tank plus a 24 hour, 100-year storm.

■ If a series of tanks are involved, containment shall be provided for 10% of the combined capacity plus a 24 hour, 100-year storm.

Below ground storage tanks shall be subject to the following RWQCB regulatory criteria:

■ All tanks shall be registered with the RWQCB and shall conform to RWQCB construction standards. The San Bernardino County Department of Environmental Health Services will be responsible and issue permits for implementation of these requirements and standards.

■ The County shall inspect and approve such tanks, every three years, for structural integrity.

\*\* 31. A "Business Plan" as defined in Chapter 6.95 of the Health and Safety Code, detailing the plan for emergency release or threatened release of hazardous materials and wastes shall be required. Obtain clearance from DEHS/Hazardous Materials Section.



32. A Hazardous Materials Handler Permit and/or Hazardous Waste Generator Permit shall be required.

SAN BERNARDINO COUNTY AIR POLLUTION CONTROL DISTRICT (SBC-APCD):

33. The Applicant shall apply to the SBC-APCD and obtain the required permits for the installation and operation of all stationary fossil fuel equipment used on site.
34. The Applicant shall submit detailed drawings and specifications to the SBC-APCD regarding the type of equipment that will be purchased and particle collection system that will be used.

ENVIRONMENTAL IMPACT REPORT MITIGATION MEASURES:

TO BE COMPLETED PRIOR TO OR DURING THE OPERATION AS REQUIRED BY THE MITIGATION MEASURE.

GEOLOGY

Seismicity

35. All structures and facilities shall meet applicable seismic building safety standards. [DEIR p. 6.2-1; (See also Conditions of Approval Nos. 6-7 above concerning artificial slopes).]
36. Project facilities shall be located so that landslides which might be induced by earthquakes will not encroach into areas where potentially hazardous chemicals are stored, ponded, or processed. [DEIR p. 6.2-1.]

Mineral Resources

37. The Lesley Ann/Jumbo and Oro Belle pit walls shall be left exposed where mineralization occurs. [DEIR p. 5.2-4.]

Paleontological Resources

38. The Applicant shall contract an individual qualified in the assessment of woodrat middens to inventory the project site for these resources before initiating the operation. If located, middens would be assessed for potential paleontological value, extracted at the discretion of BLM and County, and then stored at an approved repository. [DEIR p. 6.2-1.]

## WATER RESOURCES

### WATER QUANTITY

39. Project water requirements shall be minimized by the following operational procedures:

- a. Crushing the ore to reduce leaching time so that less water will be circulated and evaporation will be reduced.
- b. Employing drip irrigation to distribute solution directly to the heap leach surfaces. [FEIR Section 4.1.5.4.]

40. Groundwater Monitoring:

The Applicant shall comply with the "Plan for Groundwater Monitoring and Contingency Water Supply" (August 1990) which requires that:

- a. Two additional groundwater monitoring wells (W-37 and W-38) shall be developed between the West Well Field and Piute Spring.
- b. Water levels in monitor wells W-3, W-19, W-37, W-38, and PS-2 and stream flows at Piute Spring shall be monitored monthly until the end of the third year of project operation. The frequency at which water level and stream flows are monitored during the fourth and subsequent years of operation shall be determined by mutual agreement between BLM and the Applicant.
- c. In the event groundwater levels in monitor well W-37 begin to approach the level predicted by the hydrogeologic modeling completed for the EIR, an additional monitor well (W-40) shall be developed south of monitor well W-37. This well shall be monitored with the same frequency as W-37. The location of the new well will be approved by BLM before installation.
- d. In the event groundwater levels in monitor well W-37 reach the level anticipated by the hydrogeologic modeling completed for the EIR, the hydrogeologic model shall be recalibrated and the characteristics of the Lanfair Valley aquifer shall be reevaluated. The modeling report and



other information shall be submitted to BLM for its consideration and decision respecting additional mitigation measures, if any.

- e. BLM's decision respecting proposed additional mitigation actions (if any) arising from the reevaluation shall be circulated for public review and comment prior to implementation.
  - f. If water level declines in monitor well W-37 exceed the drawdown predicted by the hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Applicant shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan. [FEIR Section 4.1.5.1.]
- 41. Groundwater extraction shall be recorded at each well with flow meters. [DEIR p. 6.3-2.]
  - 42. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Applicant shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIR p. 6.3-2.]

#### WATER QUALITY

- 43. The heap leach piles shall be located to avoid disruption of the large drainage that passes through the western portion of the project site. Minor drainages that would be restricted by heap pad construction shall be diverted around the heap piles. Facilities shall be located to avoid major drainages. [DEIR p. 6.3-2, and FEIR at p. S-10.]
- 44. The Applicant shall obtain a Section 1603 permit from the California Department of Fish and Game before altering any stream channels. [DEIR p. 6.3-1.]
- 45. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIR p. 6.3-2; (See also Condition of Approval No. 30 above concerning capacity of containment area).]
- 46. The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids,

including:

- a. Impermeable synthetic liners for process solution basins and heap leach pads.
  - b. Sealed drainage and collection facilities to transport or contain leaching solution.
  - c. Diked leach pads to confine and control drainage from the leach piles.
  - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and draindown of solution from the leach pads in the event pumps could not operate because of a power failure.
  - e. Drainage or diversion ditches outside the heap leach system to preclude entry of storm run-off into the system.
  - f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.
  - g. Regularly prepared monitoring reports on the current status of operations.
  - h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion. [DEIR p. 6.3-1.]
47. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion. [DEIR p. 6.3-2.]

#### VEGETATION

48. Within one year the Applicant shall develop a revegetation research program based upon information provided by a qualified expert in desert flora. This research program shall include measures such as:
- a. Review of available materials describing methods and success rates of revegetation programs employed on other lands in the arid west to determine the best available procedures.
  - b. Development of a research methodology and a schedule for implementation of the revegetation program for submittal to BLM and the County.



- c. Revegetation success shall be determined by measuring the density and diversity of perennial species. The ten year goal for density, using only perennial species, will be 21% as compared to undisturbed control sites. Using a sigmoidal curve, the five year goal for density will be 6% of the control. The ten year goal for diversity will be 15%, expressed as a similarity index of the control. The five year goal for diversity, based on a sigmoidal curve, will be 4%, expressed as a similarity index of the control. The diversity and density measurements will be based on randomly allocated plots located within areas representative of the reclaimed lands.
- d. Stockpiling of available soil. Redistribution of these soils over disturbed areas shall be done following completion of activities on an area. Studies shall be initiated to determine where available soil would be most effectively used.
- e. Identification of dominant species to be used in revegetation. Salvaging of individual plants amenable to transplantation, such as Joshua trees and barrel cactus, shall be completed and such plants will be kept in nursery areas for replanting on reclaimed areas to provide a continuous seed source. The goal will be to transplant at least 25 percent of barrel cactus and 25 percent of all Joshua trees three to ten feet in height, unbranched or with few branches.
- f. Selection of a site appropriate for a nursery. Considerations will include water availability, access, and other requirements determined by the revegetation experts.
- g. A plan shall be developed to coordinate and phase revegetation efforts in accordance with mining and processing operations. The goal will be to initiate revegetation procedures within six months following completion of project activities over an area.
- h. Potential invasion of exotic species shall be monitored. If exotic species densities exceed levels of these species on non-disturbed areas at the Project Site, a weed control program

acceptable to the County and BLM shall be implemented.

- i. Employment of reseeding, transplantation, fertilization, and watering procedures determined appropriate for each disturbed area in the program methodology.
  - j. Evaluation of the benefits of removing, shredding, and composting vegetation that would otherwise be lost.
  - k. Ground preparation procedures shall include ripping and harrowing of compacted soils.
  - l. Implementation of a 5 year monitoring program following project completion to verify revegetation results, based upon the goals for diversity and density. [DEIR p. 6.4-2; FEIR Section 4.1.4.2.]
49. Baseline vegetation measurements shall be completed as part of the revegetation research program prior to surface-disturbing activities. [FEIR Section 3.2.1.]
50. Revegetation efforts shall be initiated as soon as practicable during the project operation period, as use of specific disturbed areas is completed. [DEIR p. 6.4-3.]
51. The project revegetation program shall collect and provide data on revegetation and recovery of the onsite desert grassland unusual plant assemblages (UPA) and provide such data to BLM to supplement UPA monitoring and planning strategies. [DEIR p. 6.4-3.]
52. Vegetation considered unnecessary for reclamation shall be made available for public collection through plant salvages conducted by BLM. [DEIR p. 6.4-3.]
53. Vegetation within areas of temporary disturbance (such as for well construction) shall be crushed, instead of bulldozed, to enhance recovery. [FEIR Section 3.2.1.]
54. Concerning the onsite location of the Stephen's Beardtongue (*Penstemon stephensii*) population the following measures shall be required:



- a. Flag, fence, sign, or otherwise delineate the onsite population, or other discovered populations to ensure avoidance during project construction and operations.
  - b. Monitor the known population and other individuals/populations that are found during project operations.
  - c. If individuals do not appear elsewhere onsite, collect and broadcast seed from the known population to other onsite areas, or transplant individuals to another location, before reclaiming mine exploration drill roads. [FEIR Section 3.2.1.]
55. Fencing shall be used to exclude livestock from revegetated areas until termination of the project and maturation of the revegetated areas, such that grazing can be accommodated. The Applicant shall be responsible for removing these fences following reclamation, as determined by BLM. [DEIR p. 6.4-3, FEIR Section 3.2.1.]

#### WILDLIFE

56. A program to educate employees about area wildlife shall be implemented by the Applicant in connection with the safety program. The program shall acquaint personnel with laws protecting vegetation and wildlife, the characteristics of desert wildlife, and proper procedures if wildlife is encountered. Drivers shall be educated about potential hazards of desert road driving, driving at proper speeds, and the importance of not harassing or interfering with wildlife, especially the desert tortoise. Employees shall comply with BLM open/closed area designations and road regulations. [DEIR p. 6.5-2.]
57. An environmental specialist or contracted consultant shall be employed by the Applicant to monitor the effectiveness of wildlife mitigation measures and the revegetation program. Results shall be reported to BLM and County monthly as concerns wildlife measures and annually concerning the revegetation program. Modification of wildlife mitigation measures can be accomplished, if necessary, as set forth in the Mitigation Compliance Plan. [DEIR p. 6.5-2; SDEIR p. E-24.]
58. Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times. [FEIR Table 3.1.]

### Desert Tortoise

59. The Applicant shall locate and flag onsite tortoise burrows before initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and FWS. [DEIR p. 6.5-3.]
60. The Applicant shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status. [DEIR p. 6.5-3; FEIR Appendix G, and Biological Opinion, p.9.]
61. A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented. [DEIR p. 6.5-3.]
62. Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife. [DEIR p. 6.5-5.]
63. Power lines shall be constructed in a manner to discourage raven nesting/roosting. [FEIR Section 3.2.1, and Table 3.1.]
64. As part of the onsite biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven population numbers are occurring. [DEIR p. 6.5-5.]
65. The Applicant shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U. S. Fish and Wildlife Service's Biological Opinion. [FEIR Section 3.2.1, Appendix G.]

### Lighting

66. Outdoor lighting for the mine pits and other areas of nighttime activities shall be shielded to direct lighting to the area of activity. [DEIR p. 6.5-4.]

### Bats

67. An examination of former mine shafts and adits shall be completed prior to earth-moving activities in the area to estimate whether they are occupied by bats or other species. The evaluation shall be completed



during the winter hibernating period by an ecologist familiar with bat fauna. If a colony is found, or substantial use by individual bats is indicated, blasting or heavy equipment use shall be restricted at or adjacent to the roost sites during the identified period of occupation. If the habitat used by a colony will be required for project development, a mitigation program shall be completed. [DEIR p. 6.5-5.]

68. To allow access to abandoned mine workings used as habitat by bats and other animals, adits and shafts on the project site that do not pose a hazard to people shall be left open or barricaded in a manner acceptable to BLM to permit animal ingress/egress. [DEIR p. 6.5-5.]

#### Raptors

69. Design and construction of electric power distribution poles shall incorporate provisions for raptor safety. [DEIR p. 6.5-5.]

#### Bighorn Sheep

70. Project fencing shall be constructed according to BLM specifications designed to prevent potential bighorn sheep entanglement. [FEIR Section 3.2.1.]

### AIR QUALITY

#### Fugitive Dust Control

71. A number of measures shall be incorporated into the project design to control the generation of PM<sub>10</sub> particulates. They include:
  - a. Haul roads within the site boundary shall be surfaced with durable gravel and shall be well maintained.
  - b. Water or surface binding agents shall be applied to haul and access roads within the site boundary as needed, depending on traffic volumes, ambient wind, and climatological conditions.
  - c. Speed restrictions shall be enforced on mine roads to minimize surface disturbance of the roadways.
  - d. Unauthorized vehicle travel shall be restricted within the site boundary to minimize surface disturbance of the roadways.
  - e. Vehicle travel to and from the project site shall

be reduced by the promotion of van pools/busing for workers.

- f. During all drilling operations, air drilling equipment shall be shrouded with standard debris collection devices and/or wet drilling techniques. Manufacturer specifications for all shrouding devices shall be submitted to the SBCAPCD for review before use. The debris collecting devices shall have a minimum design efficiency of 90 percent.
  - g. The live storage portion of the coarse ore stockpile shall be covered to minimize wind-blown dust.
  - h. Blasting during high winds shall be minimized or curtailed to minimize wind-blown dust.
  - i. The primary, secondary, and tertiary crushers, screens, and all transfer points shall be completely enclosed or shrouded to minimize exposure to wind and, at a minimum, shall use spray bars to control fugitive dust emissions. Conveyors shall be enclosed in selected areas where the moisture content and/or consistency of the material would allow generation of wind-blown dust.
  - j. Dust suppression for secondary/tertiary ore crushing operations shall be controlled using baghouses constructed to specifications acceptable to the SBC-APCD. [DEIR p. 6.6-1 and SDEIR p. 3-29.]
72. Revegetation efforts for completed portions of the overburden pile and decommissioned heap leach piles shall be initiated during the operational period rather than deferring revegetation until operations are completed. [DEIR p. 3.2-48 to 3.2-53.]
73. As required by the SBC-APCD,  $PM_{10}$  concentrations shall be monitored at several locations near the project boundaries. The monitoring data shall be routinely submitted to the SBC-APCD to demonstrate that the project is not violating ambient air quality standards. [DEIR p. 6.6-2.]

#### Fuel Use Emissions Control

74. Permanent onsite power shall be generated using propane or natural gas generators. [SDEIR p. 3-29.]
75. Emissions from mobile equipment and vehicular engines



shall be controlled by:

- a. Using only low sulfur fuels.
- b. Implementing a routine maintenance program to avoid operating inefficiencies.
- c. Using busing/van pooling. [DEIR p. 6.6-3.]

#### ENVIRONMENTAL HEALTH AND SAFETY

76. A vehicle shall be onsite for emergency response in the event of an accident. The Applicant shall maintain first aid and fire suppression equipment onsite. Procedures for emergency response shall be developed for use in the event of an accident. [DEIR p. 6.7-2.]
77. Personnel trained in security shall be onsite on a 24-hour basis to deter entry to potentially hazardous areas by unauthorized persons. [DEIR p. 6.7-2.]
78. Training programs shall be implemented to familiarize personnel with their specific jobs, handling of hazardous substances such as cyanide, and first aid procedures. [DEIR p. 6.7-2.]
79. Explosives shall be stored in a secured powder magazine constructed and maintained in accordance with Federal and local requirements. Only personnel holding valid blasting certificates shall be allowed to initiate blasting. [DEIR p. 5.7-1.]
80. The Project shall comply with applicable MSHA standards to achieve a safe working environment. Rules and regulations of County Department of Environmental Health Services (DEHS) shall be followed to assure that no significant public health hazard would be created. [DEIR p. 5.7-1.]
81. Fences, and earthen berms to block vehicular access into open pit areas, shall be erected around potentially hazardous areas to preclude entry by unauthorized personnel or visitors. [DEIR p. 5.7-7.]
82. Domestic sewage shall be disposed of in leach fields acceptable to DEHS. Portable toilet waste shall be removed offsite by a contracted hauler. [DEIR p. 5.7-5.]
83. Non-hazardous waste materials generated on the site shall be disposed at approved facilities. [DEIR p. 6.7-1.] Waste oils shall be recycled. Other hazardous wastes shall be disposed offsite, using

services and procedures approved by the California Department of Health Services and the U. S. Environmental Protection Agency. [DEIR p. 6.7-2.]

84. Trucks containing hazardous chemicals shall be properly labeled and equipped to Interstate Commerce Commission specifications. [DEIR p. 5.7-5.]
85. Drivers shall receive training in proper handling and spill cleanup measures for hazardous materials. [DEIR p. 5.7-6.]
86. The Applicant shall provide road improvements and implement a regular maintenance program along the Mitigated Access Route in a manner acceptable to BLM. A maximum speed limit of 35 miles per hour will be posted. [DEIR p. 6.7-2; FEIR Section 3.2.]
87. Transport of hazardous materials shall be limited to daylight hours, Monday through Friday. [DEIR p. 6.7-2.]

## VISUAL RESOURCES

### Site Plan

88. To minimize the degree to which they are seen from sensitive viewpoints: a) the overburden pile shall be located on an outwash slope bounded by small hills; and b) heap leach piles shall be constructed as low mesas consistent with alluvial terrace landforms near the valley floor. [DEIR p. 6.8-1.]

### Operational Activities and Equipment

89. Operation structures and the solution storage tanks shall be painted to blend with the predominant background as viewed from surrounding roads. Colors used shall be selected by BLM and County. [DEIR p. 6.8-2; (See also Condition No. 26 above).]
90. Water and dust inhibiting agents shall be employed as needed to reduce the potential visual impact of fugitive dust during the operational period. [DEIR p. 6.8-2; (See also Condition No. 66 above).]
91. Upon Project completion the Applicant shall remove all operating facilities, including structures, equipment, transmission lines, and fencing, in conformance with the Mine/Reclamation Plan requirements. [DEIR p. 6.8-2.]



## Reclamation

92. Site reclamation shall include modification of final overburden and heap leach pile shapes to reduce the impact of straight-line geometrics and potential contrast in form and line. [DEIR p. 6.8-2.]
93. Rock staining solutions shall be used on the upper mine pit walls. These solutions shall be specifically colored to reduce the contrast between the pit walls and the surrounding undisturbed slopes. [DEIR p. 6.8-2.]
94. Revegetation shall include some areas within the project boundary and along access roads that were disturbed by the actions of third parties before reclamation of such disturbances was required under the Federal Land Policy Management Act (FLPMA) and the California Surface Mining and Reclamation Act (SMARA). Clay pits shall be reclaimed using overburden, with rock staining of the upper pit wall of the clay pit on Big Chief Hill. The Applicant shall incorporate reclamation of the adjacent North Clay Pit, located offsite, into the Mine/Reclamation Plan. [DEIR p. 6.8-2; FEIR sections 3.2.1, and 3.2.2.]
95. The Applicant shall comply with all of the reclamation requirements set forth in the Mine/Reclamation Plan including, but not limited to, instituting the required revegetation program. Revegetation shall use plants common to the area. [DEIR p. 6.8-2.]

## CULTURAL RESOURCES

### Mitigation and Data Recovery Measures

96. In the event that a project-related excavation uncovers a buried paleontological or archaeological deposit on any of the patented mining claims, comments submitted by local Native American representatives pertaining to these sensitive areas shall be considered in the evaluation process and artifacts of religious value made available to qualified Native Americans for religious ceremonies. Pursuant to State and Federal law, recovered resources shall be curated at specific institutions, including the University of California at Riverside and the Nevada State Museum in Carson City, or its designate. [DEIR p. 6.9-1; and FEIR Appendix H; (See also Condition 14 above).]

## LAND USE

### Grazing

97. The Applicant shall construct and maintain fencing to restrict cattle from operational areas and access roads where required by BLM. [DEIR p. 6.10-1.]
98. Grazing lessees shall be compensated by the Applicant for livestock killed or injured by vehicles driven by project employees. [DEIR p. 6.10-2.]

### Recreation

99. The Applicant shall provide a viewpoint at the Castle Mountain Project site, describing past and present gold mining operations in the area. The interpretive site will be located at a point overlooking both the old Hart Townsite and the Lesley Ann Pit. The site shall include descriptive information about current mining operations and the history of the Hart Mining District. [DEIR p. 6.10-2.]
100. Project Site access routes shall be limited to the Project's operational period. Public use shall be discontinued following road reclamation.

### Mining

101. Following project completion, the Lesley Ann/Jumbo and Oro Belle pits shall be accessible for potential recovery of low grade ore. [DEIR p. 5.2-4.]
102. Vehicular access to the pit rims shall be prevented by constructing berms at all locations along the pit perimeter that would otherwise be accessible to vehicles. [DEIR p. 5.7-8.]

## MITIGATION COMPLIANCE PROGRAM

103. The Applicant shall comply with the provisions of the Mitigation Compliance Program, which has been adopted pursuant to State Assembly Bill 3180. [SDEIR, Appendix E.]
104. Concerning the Mitigation Compliance Program, for an emergency out of compliance condition, remedial action shall not be delayed by dispute resolution proceedings. [FEIR Section 4.2.2.2 (State Agencies, Letter 2).]



**APPENDIX E**  
**BIOLOGICAL RESOURCES DATA**

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TABLE 1  
PLANT SPECIES INVENTORY  
CASTLE MOUNTAIN MINE AND VICINITY

*ANGIOSPERMAE (DICOTYLEDONES)*

ANACARDIACEAE - SUMAC FAMILY

*Rhus trilobata anisophylla*

ASCLEPIDACEAE - MILKWEED FAMILY

*Asclepias erosa*

APIACEAE - CARROT FAMILY

*Cymopterus multinervatus*

*Lomatium nevadense*

ASTERACEAE - SUNFLOWER FAMILY

*Acamptopappus sphaerocephalus*

*Adenophyllum cooperi*

*Ambrosia dumosa*

*Ambrosia eriocentra*

*Artemisia ludoviciana*

*Baileya multiradiata*

*Baileya pauciradiata*

*Baileya pleniradiata*

*Brickellia arguta* var. *arguta*

*Brickellia agruta californica californica*

*Brickellia desertorum*\*

*Brickellia oblongifolia* var. *linifolia*

*Chaenactis stevioides* var. *brachypappa*

*Chaetopappa ericoides*

*Chrysothamnus paniculatus*

*Chrysothamnus teretifolius*

*Cirsium neomexicanum*

*Ericameria cooperi cooperi*

*Ericameria cuneata cuneata*

*Ericameria laricifolia*\*

*Ericameria linearifolia*

*Encelia actoni*

*Erigeron breweri covillei*

*Erigeron concinnus* var. *concinnus*

*Erigeron divergens*

*Eriophyllum ambiguum*

*Gutierrezia microcephala*

*Gutierrezia sarothrae*

*Hymenoclea salsola* var. *salsola*

*Machaeranthera canescens*

*Machaeranthera canescens* var. *canescens*

ASTERACEAE - SUNFLOWER FAMILY (*continued*)

*Malacothrix coulteri*

*Psilostrophe cooperi*

*Senecio multilobatus*

*Stephanomeria exigua exigua*

*Stephanomeria parryi*

*Stephanomeria pauciflora*

*Stylocline micropoides*

*Tetradymia stenolepis*

*Viguiera parishii*

*Xylorhiza tortifolia*

BIGNONIACEAE - BIGNONIA FAMILY

*Chilopsis linearis arcuata*

BORAGINACEAE - BORAGE FAMILY

*Amsinckia intermedia*

*Amsinckia tessellata*

*Cryptantha circumscissa*

*Cryptantha nevadensis*

*Cryptantha pterocarya*

*Cryptantha tumulosa*

*Pectocarya setosa*

*Plagiobothrys arizonicus*

BRASSICACEAE - MUSTARD FAMILY

*Arabis perennans*

*Arabis pulchra*

*Caulanthus cooperi*

*Descurainea pinnata*

*Descurainea sophia*

*Draba cuneifolia*

*Lepidium fremontii*

*Lepidium lasiocarpum*

*Lesquerella palmeri*

*Sisymbrium irio*

*Stanleya pinnata pinnata*

*Streptanthella longirostris*

*Thysanocarpus curvipes*

*Thelypodium lasiophyllum*

## APPENDICES

TABLE 1 (Continued)

### PLANT SPECIES INVENTORY CASTLE MOUNTAIN MINE AND VICINITY

#### ANGIOSPERMAE (DICOTYLEDONES) Continued

##### CACTACEAE - CACTUS FAMILY

*Echinocactus polycephalus*  
*Echinocereus engelmannii* var. *chrysocentrus*  
*Escobaria vivipara* var. *deserti*  
*Ferocactus cylindraceus* var. *lecontei*  
*Mammillaria tetrancistra*  
*Opuntia acanthocarpa* var. *coloradensis*  
*Opuntia basilaris* var. *basilaris*  
*Opuntia chlorotica*  
*Opuntia erinacea* var. *erinacea*  
*Opuntia stanlyi* var. *parishii*

##### CARYOPHYLLACEAE - PINK FAMILY

*Arenaria macradenia*

##### CHENOPODIACEAE - GOOSEFOOT FAMILY

*Atriplex canescens*  
*Chenopodium incanum occidentale*  
*Grayia spinosa*  
*Krascheninnikovia lanata*  
*Salsola tragus*

##### CUCURBITACEAE - GOURD FAMILY

*Cucurbita palmata*

##### EUPHORBIACEAE - SPURGE FAMILY

*Chamaesyce albomarginata*  
*Euphorbia incisa*

##### FABACEAE - PEA FAMILY

*Acacia greggii*  
*Astragalus lentiginosus* var. *fremontii*  
*Astragalus nuttallianus*  
*Hoffmanseggia glauca*  
*Lotus humistratus*  
*Lupinus brevicaulis*  
*Lupinus concinnus*

##### GERANIACEAE - GERANIUM FAMILY

*Erodium cicutarium*

##### HYDROPHYLLACEAE - WATERLEAF FAMILY

*Eucrypta micrantha*  
*Phacelia crenulata* var. *crenulata*  
*Phacelia distans*  
*Phacelia fremontii*  
*Phacelia vallis-mortae*\*

##### KRAMERIACEAE - RHATANY FAMILY

*Krameria parvifolia imparata*

##### LAMIACEAE - MINT FAMILY

*Marrubium vulgare*  
*Salazaria mexicana*  
*Salvia columbariae* var. *columbariae*  
*Salvia dorrii* var. *dorrii*  
*Salvia mohavensis*

##### LINACEAE - FLAX FAMILY

*Linum lewisii*  
*Linum puberulum*

##### LOASACEAE - LOASA FAMILY

*Mentzelia albicaulis*

##### MALVACEAE - MALLOW FAMILY

*Sphaeralcea ambigua* var. *ambigua*

##### NYCTAGINACEAE - FOUR O'CLOCK FAMILY

*Allionia incarnata*  
*Mirabilis bigelovii*  
*Mirabilis coccineus*  
*Mirabilis multiflora* var. *pubescens*

##### OLEACEAE - OLIVA FAMILY

*Menodora scabra*  
*Menodora spinescens*

##### ONAGRACEAE - EVENING PRIMROSE FAMILY

*Gaura coccinea*  
*Oenothera californica californica*  
*Oenothera primiveris*\*

##### PAPAVERACEAE - POPPY FAMILY

*Eschscholzia mexicana*

##### PLANTAGINACEAE - PLANTAIN FAMILY

*Plantago purshii*

##### POLEMONIACEAE - PHLOX FAMILY

*Eriastrum diffusum*  
*Eriastrum wilcoxii*  
*Gilia aliquanta*  
*Linanthus demissus*  
*Linanthus dichotomus*



TABLE 1 (Continued)  
PLANT SPECIES INVENTORY CASTLE MOUNTAIN MINE AND VICINITY

ANGIOSPERMAE (DICOTYLEDONES) Continued

POLYGONACEAE - BUCKWHEAT FAMILY

*Centrostegia thurberi*  
*Eriogonum deflexum* var. *deflexum*  
*Eriogonum fasciculatum* var. *polifoium*  
*Eriogonum heermanii* var. *floccosum*  
*Eriogonum inflatum* var. *inflatum*  
*Eriogonum nidularium*  
*Eriogonum palmerianum*  
*Eriogonum pusillum*  
*Eriogonum trichopes*  
*Eriogonum wrightii*  
*Rumex hymenosepalus*

RANUNCULACEAE - BUTTERCUP FAMILY

*Delphinium parishii*

ROSACEAE - ROSE FAMILY

*Coleogyne ramosissima*  
*Fallugia paradoxa*  
*Prunus fasciculatus fasciculatus*  
*Purshia glandulosa*

SCROPHULARIACEAE - FIGWORT FAMILY

*Castilleja angustifolia*  
*Castilleja linarlifolia*  
*Penstemon palmeri*  
*Penstemon stephensii*\*

SOLANACEAE - NIGHTSHADE FAMILY

*Lycium andersonii*  
*Lycium cooperi*  
*Physalis hederifolia*

VERBENACEAE - Vervain Family

*Aloysia wrightii*

ZYGOPHYLLACEAE - CALTROP FAMILY

*Larrea tridentata*

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ANGIOSPHERME (MONOCOTYLEDONES)

LILIACEAE - LILY FAMILY

*Calochortus kennedyi*  
*Dichelostemma capitatum*  
*Yucca baccata*  
*Yucca brevifolia jaegeriana*  
*Yucca schidigera*

POACEAE - GRASS FAMILY

*Achnatherum hymenoides*  
*Achnatherum speciosum*  
*Aristida purpurea*  
*Bouteloua* sp.\*  
*Bromus madritensi rubens*  
*Bromus tectorum*  
*Elymus elymoides elym*  
*Erioneuron pulchellum*  
*Muhlenbergia porteri*  
*Pleuraphis jamesii*  
*Vulpia octoflora hirtella*

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GYMNOSPERMAE

CUPRESSACEAE - CYPRESS FAMILY

*Juniperus osteosperma*

PINACEAE - PINE FAMILY

*Pinus monophylla*

EPHEDRACEAE - EPHEDRA FAMILY

*Ephedra nevadensis*  
*Ephedra viridis*

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\*Plants not in flower; identification tentative.

## APPENDICES

TABLE 2  
AMPHIBIANS AND REPTILES OBSERVED OR EXPECTED TO OCCUR  
IN THE CASTLE MOUNTAIN AREA

This list represents species expected to occur in the based on range maps (Stebbins, 1986), habitat preferences, and literature records. Species actually recorded from the area by Gould (1987) and this study are indicated by "\*". Questionable species are indicated by "?".

### AMPHIBIANS

*Bufo punctatus*, Red-spotted Toad

### LIZARDS

- \* *Callisaurus draconoides*, Zebra-tailed Lizard
- \* *Cnemidophorus tigris*, Western Whiptail
- Coleonyx variegatus*, Banded Gecko
- Crotaphytus insularis*, Collared Lizard
- \* *Dipsosaurus dorsalis*, Desert Iguana
- \* *Gambelia wislizenii*, Leopard Lizard
- Heloderma suspectum*, Gila Monster
- \* *Phrynosoma platyrhinos*, Desert Horned Lizard
- Sauromalus obesus*, Chuckwalla
- \* *Sceloporus magister*, Desert Spiny Lizard
- Urosaurus graciosus*, Long-tailed Brush Lizard
- \* *Uta stansburiana*, Side-blotched Lizard
- Xantusia vigilis*, Desert Night Lizard

### REPTILES

### SNAKES

- Arizona elegans*, Glossy Snake
- Chinonactis occipitalis*, Western Shovel-nosed Snake
- Crotalus cerastes*, Sidewinder Rattlesnake
- Crotalus mitchelli*, Speckled Rattlesnake
- Crotalus atrox*, Western Diamondback Rattlesnake
- Crotalus scutulatus*, Mohave Rattlesnake
- Hypsiglena torquata*, Night Snake
- Lampropeltis getulus*, Common Kingsnake
- Leptotyphlops humilis*, Western Blind Snake
- Lichanura trivigata*, Rosy Boa
- Masticophis taeniatus*, Stripped Whipsnake
- Masticophis flagellum*, Coachwhip
- Phyllorhynchus decurtatus*, Leaf-nose Snake
- Pituophis melanoleucus*, Gopher Snake
- Rhinocheilus lecontei*, Long-nosed Snake
- Salvadora hexalepis*, Western Patch-nose Snake
- Sonora semiannulata*, Western Ground Snake
- ? *Tantilla hobartsmithi*, Great Gasin Black-headed Snake
- Trimorphodon lambda*, Sonoran Lyre Snake

### TURTLES

- Gopherus agassizii*, Desert Tortoise



TABLE 3  
BIRDS OBSERVED OR EXPECTED TO OCCUR  
IN THE CASTLE MOUNTAIN AREA

This list includes species expected in the area based on studies in the Clark Mountains (Environmental Monitoring and Service, 1985; Miller, 1940; Soda Springs Check List, 1988) and at the Soda Springs Field Station south of Baker. Those species actually observed in the area by Gould, 1987a,b and this study are indicated by "\*".

<i>Accipiter cooperii</i> , Cooper's Hawk	<i>Molothrus ater</i> , Brown-headed Cowbird
<i>Accipiter striatus</i> , Sharp-shinned Hawk	* <i>Myiarchus cinerascens</i> , Ash-throated Flycatcher
<i>Aeronautes saxatalis</i> , White-throated Swift	<i>Myioborus pictus</i> , Painted Redstart
* <i>Alectoris chukar</i> , Chukar	<i>Oporornis tolmieri</i> , MacGillivray's Warbler
<i>Amphispiza belli</i> , Sage Sparrow	* <i>Phalaenoptilus nuttallii</i> , Common Poorwill
* <i>Amphispiza bilineata</i> , Black-throated Sparrow	<i>Pheucticus melanocephalus</i> , Black-headed Grosbeak
* <i>Aquila chrysaetos</i> , Golden Eagle	* <i>Picoides scalaris</i> , Ladder-backed Woodpecker
<i>Asio otus</i> , Long-eared Owl	* <i>Pipilo chlorurus</i> , Green-tailed Towhee
<i>Athene cunicularia</i> , Burrowing Owl	<i>Pipilo erythrophthalmus</i> , Rufous-sided Towhee
<i>Auriparus flaviceps</i> , Verdin	* <i>Piranga flava</i> , Hepatic Tanager
* <i>Bubo virginianus</i> , Great Horned Owl	<i>Piranga ludoviciana</i> , Western Tanager
* <i>Buteo jamaicensis</i> , Red-tailed Hawk	<i>Polioptila caerulea</i> , Blue-gray Gnatcatcher
<i>Buteo swainsoni</i> , Swainson's Hawk	* <i>Polioptila melanura</i> , Black-tailed Gnatcatcher
* <i>Callipepla gambelii</i> , Gambel's Quail	<i>Pooecetes gramineus</i> , Vesper Sparrow
<i>Calypte costae</i> , Costa's Hummingbird	<i>Regulus calendula</i> , Ruby-crowned Kinglet
* <i>Campylorhynchus brunneicapillus</i> , Cactus Wren	* <i>Salpinctes obsoletus</i> , Rock Wren
<i>Carduelis psaltria</i> , Lesser Goldfinch	* <i>Sayornis saya</i> , Say's Phoebe
* <i>Carpodacus mexicanus</i> , House Finch	<i>Sayornis nigricans</i> , Black Phoebe
<i>Carpodacus purpureus</i> , Purple Finch	<i>Spizella atrogularis</i> , Black-chinned Sparrow
<i>Cathartes aura</i> , Turkey Vulture	<i>Spizella breweri</i> , Brewer's Sparrow
<i>Chondestes grammacus</i> , Lark Sparrow	<i>Spizella passerina</i> , Chipping Sparrow
<i>Chordeiles acutipennis</i> , Lesser Nighthawk	<i>Spyrapicus varius</i> , Yellow-breasted Sapsucker
<i>Chordeiles minor</i> , Common Nighthawk	<i>Sturnella neglecta</i> , Western Meadowlark
<i>Colaptes auratus</i> , Common Flicker	<i>Sturnus vulgaris</i> , European Starling
* <i>Corvus corax</i> , Common Raven	<i>Thryomanes bewickii</i> , Bewick's Wren
<i>Dendroica coronata</i> , Yellow-rumped Warbler	<i>Toxostoma bendirei</i> , Benire's Thrasher
<i>Dendroica nigrescens</i> , Black-throated Gray Warbler	* <i>Toxostoma dorsale</i> , Crissal Thrasher
* <i>Eremophila alpestris</i> , Horned Lark	<i>Toxostoma lecontei</i> , LeConte's Thrasher
<i>Euphagus cyanocephalus</i> , Brewer's Blackbird	* <i>Tryannus verticalis</i> , Western Kingbird
<i>Falco mexicanus</i> , Prairie Falcon	* <i>Turdus migratorius</i> , American Robin
* <i>Falco sparverius</i> , American Kestrel	* <i>Tyrannus vociferans</i> , Cassin's Kingbird
<i>Geococcyx californianus</i> , Greater Roadrunner	<i>Tyto alba</i> , Barn Owl
<i>Gymnorhinus cyanocephalus</i> , Pinyon Jay	<i>Vermivora virginiae</i> , Virginia's Warbler
<i>Hirundo phaeorhynchos</i> , Cliff Swallow	<i>Vireo solitarius</i> , Solitary Vireo
* <i>Icterus parisorum</i> , Scott's Oriole	<i>Vireo vicinior</i> , Gray Vireo
<i>Junco hyemalis</i> , Dark-eyed Junco	* <i>Wilsonia pusilla</i> , Wilson's Warbler
* <i>Lanius ludovicianus</i> , Loggerhead Shrike	* <i>Zenaidura macroura</i> , Mourning Dove
<i>Melospiza melodia</i> , Song Sparrow	<i>Zonotrichia leucophrys</i> , White-crowned Sparrow
* <i>Mimus polyglottos</i> , Northern Mockingbird	

## APPENDICES

**TABLE 4**  
**LIST OF MIGRATORY AQUATIC AND WATER BIRDS LIKELY TO BE ATTRACTED**  
**TO OPEN PONDS OF WATER IN THE EAST MOJAVE DESERT**

List based on common water and shore birds observed at the Soda Springs Field Station of the California State Universities and Colleges south of Baker, California. None of these birds would be expected to stay at the site due to the lack of food. While all migratory birds are protected or regulated, none of these are specifically state or federally listed as Rare or Endangered:

American Avocet	Hooded Merganser
American Coot	Horned Grebe
American Widgeon	Killdeer
Belted Kingfisher	Least Sandpiper
Black-crowned Night Heron	Lesser Scaup
Black-necked Stilt	Lesser yellowlegs
Blue-winged Teal	Little Blue Heron
Bufflehead	Long-billed Dowitcher
Canadian Goose	Mallard
Canvasback	Northern Palarope
Cattle Egret	Pied-billed Grebe
Cinnamon Teal	Pintail
Common Egret	Ring-billed Gull
Common Merganser	Ruddy Duck
Double-crested Cormorant	Semipalmated Sandpiper
Eared Grebe	Shoveler
European Widgeon	Snowy Egret
Gadwall	Spotted Sandpiper
Great Blue Heron	Western Grebe
Greater Yellowlegs	White-faced Ibis
Green Heron	Wilton's Palarope
Green-winged Teal	Willet
Herring Gull	



**TABLE 5**  
**MAMMALS OBSERVED OR EXPECTED TO OCCUR**  
**IN THE CASTLE MOUNTAIN AREA**

This list is based on studies done for the previous project EIS/EIR, other studies completed in the project vicinity, and field studies completed for this EIS/EIR.

<i>Ammospermophilus leucurus</i> , Antelope Ground Squirrel	<i>Spilogale putorius</i> , Spotted Skunk
<i>Antrozous pallidus</i> , Pallid Bat	<i>Sylvilagus auduboni</i> , Desert Cottontail
<i>Bassariscus astutus</i> , Ringtail	<i>Tadarida brasiliensis</i> , Brazilian Free-tailed Bat
<i>Bos taurus</i> , Cattle	<i>Tadarida molossa</i> , Big Free-tailed Bat
<i>Canis latrans</i> , Coyote	<i>Taxidea taxus</i> , Badger
<i>Citellus tereticaudus</i> , Round-tailed Ground Squirrel	<i>Thomomys bottae</i> , Botto Pocket Gopher
<i>Dipodomys deserti</i> , Desert Kangaroo Rat	<i>Urocyon cinereoargenteus</i> , Gray Fox
<i>Dipodomys merriami</i> , Marriam Kangaroo Rat	<i>Vulpes macrotis</i> , Kit Fox
<i>Eptesicus fuscus</i> , Big Brown Bat	
<i>Equus asinus</i> , Burro	
<i>Felis concolor</i> , Mountain Lion	
<i>Lasionycteris noctivagans</i> , Silver-haired Bat	
<i>Lasiurus cinerius</i> , Hoary Bat	
<i>Lepus californicus</i> , Black-tailed Hare	
<i>Lynx rufus</i> , Bobcat	
<i>Macrotus californicus</i> , California Leaf-nosed Bat	
<i>Mephitis</i> , Striped Skunk	
<i>Mus musculus</i> , House Mouse	
<i>Myotis californicus</i> , California Myotis	
<i>Myotis subulatus</i> , Small-footed Myotis	
<i>Myotis thysanodes</i> , Fringed Myotis	
<i>Myotis thysanodes</i> , Fringed Myotis	
<i>Myotis volans</i> , Hairy-winged Myotis	
<i>Myotis yumanensis</i> , Yuma Myotis	
<i>Neotoma lepida</i> , Desert Wood Rat	
<i>Notiosorex crawfordi</i> , Gray Shrew	
<i>Odocoileus hemionus</i> , Mule Deer	
<i>Onychomys torridus</i> , Southern Grasshopper Mouse	
<i>Otospermophilus variegatus</i> , Rock Squirrel	
<i>Ovis canadensis</i> , Bighorn	
<i>Perognathus formosus</i> , Long-tailed Pocket Mouse	
<i>Perognathus longimembris</i> , Little Pocket Mouse	
<i>Perognathus parvus</i> , Great Basin Pocket Mouse	
<i>Perognathus spinatus</i> , Spiny Pocket Mouse	
<i>Peromyscus boylii</i> , Brush Mouse	
<i>Peromyscus crinitis</i> , Canyon Mouse	
<i>Peromyscus eremicus</i> , Cactus Mouse	
<i>Peromyscus maniculatus</i> , Deer Mouse	
<i>Peromyscus truei</i> , Pinyon Mouse	
<i>Pipistrellus hesperus</i> , Western Pipistrelle	
<i>Plecotus townsendii</i> , Townsend's Big-eared Bat**	
<i>Reithrodontomys megalotis</i> , Western Harvest Mouse	
<i>Sorex merriami</i> , Merriam Shrew	

## APPENDICES

TABLE 6  
BATS EXPECTED TO OCCUR IN THE VICINITY OF  
THE CASTLE MOUNTAIN PROJECT SITE

### PHYLLOSTOMIDEA\*

*Macrotus californicus*, California Leaf-nosed Bat\*\*

### VESPERTILIONIDAE

*Antrozous pallidus*, Pallid Bat

*Eptesicus fuscus*, Big Brown Bat

*Lasionycteris noctivagans*, Silver-haired Bat

*Lasiurus cinereus*, Hoary Bat

*Myotis californicus*, California Myotis

*Myotis volans*, Long-legged Myotis

*Myotis thysanodes*, Fringed Myotis

*Myotis yumanensis*, Yuma Myotis

*Pipistrellus hesperus*, Western Pipistrelle

*Plecotus townsendii*, Townsend's Big-eared Bat\*\*

### MOLOSSIDAE

*Tadarida brasiliensis*, Brazilian Free-tailed Bat

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NOTES: Species of Special Concern (Williams, 1986):

\*Highest Priority

\*\*Second Priority

Nomenclature follows Jones *et al.* (1982)



**APPENDIX F**  
**AIR QUALITY DATA**

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## APPENDIX F AIR QUALITY

Air contaminant emission factor equations, assumptions, calculations and reference materials used to estimate the potential impact of the proposed action upon ambient air quality are presented in this appendix.

From an air quality perspective, the Proposed Action represents only a realignment of existing haul routes and repositioning of existing mineral extraction activities. Material extraction and processing rates will not vary from the existing permit limits. Therefore, it is appropriate to evaluate air contaminant emissions as an incremental increase of existing site emissions, and to base calculations on emission factors and operational assumptions used to prepare the most recent regulatory agency-sponsored analyses of Castle Mountain Mine activities. Emission calculations and air quality impacts assessed for the proposed action are based on the following documents:

- *Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project.* Prepared by MDAQMD; March 15, 1991. This final new source review document, prepared by MDAQMD, provides the basis for all emission factor equations, and operational assumptions used in compiling the site air contaminant emissions inventory.
- *Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project.* Prepared by Viceroy Gold Corporation; April 14, 1993. This authority to construct document, prepared by Viceroy Gold Corporation, and accepted by MDAQMD, documents a series of modifications to site conditions permitted via the 1991 final new source review document. Site and process modifications included: (1) increase of ore processing activity from the original rate of 11,000 tons per peak day, 3 million tons per year to 15,000 tons per peak day, 4.5 million tons per year; (2) addition of a comminution circuit to the ore processing facility (i.e., an ore extraction operation designed to process high-grade ores); (3) elimination of onsite power generation (due to connection of the site to commercial electrical power suppliers); and (4) substitution of low-sulfur diesel fuel in all site equipment. The net result of these modifications was a substantial decrease in site ROG, NO<sub>x</sub>, SO<sub>x</sub>, and CO emissions, and a 5 percent increase in ore processing-related PM<sub>10</sub> emissions. The increase in PM<sub>10</sub> emissions was more than offset by a 32 percent decrease in diesel powered equipment-related SO<sub>x</sub> emissions. As a result of the elimination of sources, and offsetting of ore processing-related PM<sub>10</sub> with a decrease in diesel powered equipment-related SO<sub>x</sub> emissions, the site modifications listed in this authority to construct application resulted in a net benefit to air quality.
- Site maps and material removal descriptions provided in personal communications from Mr. C. Mitchell, Viceroy Gold Corporation, July 21 and 26, 1996.

Site development plans and engineering diagrams provided by the applicant were evaluated to compile tables of material removal statistics and estimated haul road mileage for each year of the Proposed Action and South Overburden Site Expansion Alternative. These data were applied to the 1993 Castle Mountain Mine emission inventory to extrapolate potential emission increases associated with the Proposed Action and South Overburden Site Expansion Alternative. Based on data provided by the applicant, haul road mileage and potential site air contaminant emissions peak in 2004 for the Proposed Action, and 2003 for the South Overburden Site Expansion Alternative. Emissions inventories were prepared for these peak years, and net emission increases with respect to the Existing Permit Limit (i.e., 1993 Castle Mountain Mine emission inventory) were calculated for each pollutant. Net emission increases were compared to emission thresholds provided by MDAQMD to determine whether increases in air contaminant emissions associated with the Proposed Action or South Overburden Site Expansion Alternative represent significant air quality impacts.



## APPENDICES

Calculations and assumptions highlighted in the preceding discussion are summarized in the following tables:

- *Table 1 - Material Removal Rate (tons/year), Proposed Action:* This table summarizes data supplied by the applicant regarding mineral and overburden removal rates by mining area and project year for the Proposed Action.
- *Table 2 - Material Removal Rate (tons/year), South Overburden Site Expansion Alternative:* This table summarizes data supplied by the applicant regarding mineral and overburden removal rates by mining area and project year for the South Overburden Site Expansion Alternative.
- *Table 3 - One-Way Haul Road Distances (feet), Proposed Action:* Based on site maps and mine plan descriptions supplied by the applicant, haul road distances were estimated for each mining area by project year for the Proposed Action.
- *Table 4 - One-Way Haul Road Distances (feet), South Overburden Site Expansion Alternative:* Based on site maps and mine plan descriptions supplied by the applicant, haul road distances were estimated for each mining area by project year for the South Overburden Site Expansion Alternative.
- *Table 5 - Haul Truck Vehicle Miles Traveled (round trip), Proposed Action:* Based on data presented in Tables 1 and 3, haul truck vehicle miles traveled were calculated for each mining area by project year for the Proposed Action.
- *Table 6 - Haul Truck Vehicle Miles Traveled (round trip), South Overburden Site Expansion Alternative:* Based on data presented in Tables 2 and 4, haul truck vehicle miles traveled were calculated for each mining area by project year for the South Overburden Site Expansion Alternative.
- *Table 7 - Material Removal and Haul Road Summary, Proposed Action:* Based on data presented in Table 5 and haul road fugitive PM10 emission factors reported in *Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project* (MDAQMD 1991), haul truck fugitive PM10 emissions were estimated for each mining area by project year for the Proposed Action.
- *Table 8 - Material Removal and Haul Road Summary, South Overburden Site Expansion Alternative:* Based on data presented in Table 6 and haul road fugitive PM10 emission factors reported in *Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project* (MDAQMD 1991), haul truck fugitive PM10 emissions were estimated for each mining area by project year for the South Overburden Site Expansion Alternative.
- *Table 9 - Castle Mountain Mine Emission Rates, Final New Source Review - March 1991:* This table was excerpted from the *Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project* (MDAQMD 1991), and summarizes air contaminant emissions from the Castle Mountain Mine permitted by MDAQMD in 1991.
- *Table 10 - Castle Mountain Mine Emission Rates, 1993 Permit Conditions:* This table was prepared using data presented in Table 9, and information regarding site modifications approved by MDAQMD in 1993, summarized in *Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project* (Viceroy Gold Corporation 1993). The table represents air contaminant emissions for the Existing Permit Limit conditions, as permitted by MDAQMD in 1993.
- *Table 11 - Castle Mountain Mine Emission Rates, Proposed Action - 2004 Operations:* This table was prepared using data presented in Table 10, and information regarding increases in haul road mileage associated with the Proposed Action summarized in Table 7. Haul road fugitive PM10 emissions and diesel exhaust emissions were scaled from Existing Permit Limit conditions using haul road mileage



estimated for the year 2004, the year in which haul road mileage is expected to peak for the Proposed Action. The table represents potential air contaminant emissions for the Proposed Action during the year 2004.

- *Table 12 - Castle Mountain Mine Emission Rates, Summary, South Overburden Site Expansion Alternative - 2003 Operations:* This table was prepared using data presented in Table 10, and information regarding increases in haul road mileage associated with the South Overburden Site Expansion Alternative summarized in Table 8. Haul road fugitive PM10 emissions and diesel exhaust emissions were scaled from Existing Permit Limit conditions using haul road mileage estimated for the year 2003, the year in which haul road mileage is expected to peak for the South Overburden Site Expansion Alternative. The table represents potential air contaminant emissions for the South Overburden Site Expansion Alternative during the year 2003.
- *Table 13 - Summary, Estimated Air Contaminant Emissions, Existing Permit Limit:* This table summarizes emission estimates detailed in Table 10. The table represents air contaminant emissions for the Existing Permit Limit conditions, as permitted by MDAQMD in 1993.
- *Table 14 - Summary, Estimated Air Contaminant Emissions, Proposed Action - 2004 Operations:* This table summarizes emission estimates detailed in Table 11. The table represents potential air contaminant emissions for the Proposed Action during the year 2004.
- *Table 15 - Summary, Estimated Air Contaminant Emissions, South Overburden Site Expansion Alternative - 2003 Operations:* This table summarizes emission estimates detailed in Table 12. The table represents potential air contaminant emissions for the South Overburden Site Expansion Alternative during the year 2003.
- *Table 16 - Comparison of Net Emission Increases to Significance Thresholds:* This table is based on emission summaries reported in Tables 13 through 15, and summarizes the calculation of net emission increases, versus Existing Permit Limit conditions, associated with the Proposed Action and South Overburden Site Expansion Alternative. The table compares the net emission increases to emission thresholds provided by MDAQMD to determine whether increases in air contaminant emissions associated with the Proposed Action or South Overburden Site Expansion Alternative represent significant air quality impacts.
- *Table 17 - Castle Mountain Mine Emission Control Efficiencies, Proposed Action - 2004 Operations:* In order to show the effect of mitigation measures adopted for this project, it was necessary to evaluate previous project emission inventories to determine the emission control factors assumed during their compilation. This table summarizes the emission control factors (in percent) attributable to emission reduction measures adopted for the Proposed Action. The table was compiled based on data taken from the *Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project* (MDAQMD, 1991), and the *Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project* (Viceroy Gold Corporation, 1993).
- *Table 18 - Castle Mountain Mine Uncontrolled Emission Rates, Proposed Action 2000 Operations:* This table shows estimated uncontrolled air contaminant emissions for the Proposed Action. The table was prepared using controlled emissions estimates summarized in Table 11, and source-specific control factors summarized in Table 17.
- *Table 19 - Castle Mountain Mine Net Emission Control Efficiencies, Proposed Action - 2004 Operations:* Based on the uncontrolled emission rates calculated in Table 18, and the controlled emission rates summarized in Table 11, this table estimates the net emission control efficiencies attributable to the mitigation measures adopted for the Proposed Action.

**TABLE 1**  
**MATERIAL REMOVAL RATE (tons/year)**  
**PROPOSED ACTION**

PERIOD	PIT SOURCE	MINE AREAS				DUMP LOCATIONS						
		TONS MATERIAL	TONS WASTE ROCK	TONS OVBDN	TONS ORE	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
Existing Permit	Lesley Ann OBHT	18,720,000	15,600,000		3,120,000	15,600,000						3,120,000
	Jumbo (\$600) S.Extension											
	SUBTOTAL	18,720,000	15,600,000	0	3,120,000	15,600,000	0	0	0	0	0	3,120,000
1996	Lesley Ann OBHT	16,051,000	13,603,000		2,448,000	13,603,000						2,448,000
	Jumbo (\$600) S.Extension	1,177,000	560,000		617,000			560,000				617,000
	Jumbo (\$600) S.Extension	1,492,000	1,215,000	222,000	55,000			1,437,000				55,000
	SUBTOTAL	18,720,000	15,378,000	222,000	3,120,000	13,603,000	0	1,997,000	0	0	0	3,120,000
1997	Lesley Ann OBHT	9,359,000	6,434,000		2,925,000				3,113,000			2,925,000
	Jumbo (\$600) S.Extension	6,905,000	3,449,000	2,299,000	1,157,000			3,321,000	4,000,000			1,157,000
	Jumbo (\$600) S.Extension							1,748,000				
	SUBTOTAL	16,264,000	9,883,000	2,299,000	4,082,000	0	0	5,069,000	7,113,000	0	0	4,082,000
1998	Lesley Ann OBHT	14,054,000	10,721,000		3,333,000							3,333,000
	Jumbo (\$600) S.Extension	3,410,000	1,731,000	1,100,000	579,000			8,176,000	2,545,000			579,000
	Jumbo (\$600) S.Extension							1,831,000	1,000,000			
	SUBTOTAL	17,464,000	12,452,000	1,100,000	3,912,000	0	0	10,007,000	3,545,000	0	0	3,912,000
1999	Lesley Ann OBHT	14,823,000	10,719,000		4,104,000							4,104,000
	Jumbo (\$600) S.Extension	2,437,000	1,401,000	1,000,000	36,000			5,994,000	4,725,000			36,000
	Jumbo (\$600) S.Extension							2,401,000				
	SUBTOTAL	17,260,000	12,120,000	1,000,000	4,140,000	0	0	8,395,000	4,725,000	0	0	4,140,000
2000	Lesley Ann OBHT	9,373,000	5,567,000		3,806,000				5,567,000			3,806,000
	Jumbo (\$600) S.Extension	7,859,000	2,543,000	5,000,000	316,000			7,543,000				316,000
	Jumbo (\$600) S.Extension											
	SUBTOTAL											



**TABLE 1**  
**MATERIAL REMOVAL RATE (tons/year)**  
**PROPOSED ACTION**

PERIOD	PIT SOURCE	MINE AREAS				DUMP LOCATIONS						
		TONS MATERIAL	TONS WASTE ROCK	TONS OVBDN	TONS ORE	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
	SUBTOTAL	17,232,000	8,110,000	5,000,000	4,122,000	0	0	7,543,000	5,567,000	0	0	4,122,000
2001	Lesley Ann OBHT	1,881,000	788,000		1,093,000				788,000			1,093,000
	Jumbo	15,993,000	10,290,000	3,212,000	2,491,000			13,502,000				2,491,000
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	17,874,000	11,078,000	3,212,000	3,584,000	0	0	13,502,000	788,000	0	0	3,584,000
2002	Lesley Ann OBHT	3,000,000	3,000,000					3,000,000				
	Jumbo	4,243,000	1,549,000		2,694,000			1,549,000				2,694,000
	Jumbo (\$600)	4,000,000	2,800,000	1,200,000				4,000,000				
	S.Extension	6,598,000	5,277,000		1,321,000	5,277,000						1,321,000
	SUBTOTAL	17,841,000	12,626,000	1,200,000	4,015,000	5,277,000	0	8,549,000	0	0	0	4,015,000
2003	Lesley Ann OBHT	1,291,000	1,291,000					1,291,000				
	Jumbo	7,798,000	6,428,000		1,370,000			6,428,000				1,370,000
	Jumbo (\$600)											
	S.Extension	8,752,000	7,000,000		1,752,000	7,000,000						1,752,000
	SUBTOTAL	17,841,000	14,719,000	0	3,122,000	7,000,000	0	7,719,000	0	0	0	3,122,000
2004	Lesley Ann OBHT	5,336,000	4,432,000		904,000			4,432,000				904,000
	Jumbo											
	Jumbo (\$600)											
	S.Extension	12,503,000	10,000,000		2,503,000	7,000,000				3,000,000		2,503,000
	SUBTOTAL	17,839,000	14,432,000	0	3,407,000	7,000,000	0	4,432,000	0	3,000,000	0	3,407,000
2005	Lesley Ann OBHT	5,336,000	4,432,000		904,000					4,432,000		904,000
	Jumbo											
	Jumbo (\$600)											
	S.Extension	12,503,000	10,000,000		2,503,000					10,000,000		2,503,000
	SUBTOTAL	17,839,000	14,432,000	0	3,407,000	0	0	0	0	14,432,000	0	3,407,000
2006	Lesley Ann OBHT	7,944,000	6,598,000		1,346,000					6,598,000		1,346,000
	Jumbo											
	Jumbo (\$600)											

**TABLE 1**  
**MATERIAL REMOVAL RATE (tons/year)**  
**PROPOSED ACTION**

PERIOD	PIT SOURCE	MINE AREAS				DUMP LOCATIONS						
		TONS MATERIAL	TONS WASTE ROCK	TONS OVBDN	TONS ORE	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
	S.Extension	9,899,000	7,917,000		1,982,000					7,917,000		1,982,000
	SUBTOTAL	17,843,000	14,515,000	0	3,328,000	0	0	0	0	14,515,000	0	3,328,000
2007	Lesley Ann											
	OBHT											
	Jumbo											
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	17,843,000	14,820,000	0	3,023,000	0	0	0	14,820,000	0	0	3,023,000
2008	Lesley Ann											
	OBHT											
	Jumbo											
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	17,843,000	14,820,000	0	3,023,000	0	0	0	0	0	14,820,000	3,023,000
2009	Lesley Ann											
	OBHT											
	Jumbo											
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	13,799,000	11,461,000	0	2,338,000	0	0	0	0	0	11,461,000	2,338,000
<b>TOTALS</b>		243,502,000	180,846,000	14,033,000	48,623,000	32,880,000	0	67,213,000	36,558,000	31,947,000	26,281,000	48,623,000

Source: Information provided in personal communications from Mr. C. Mitchell, Viceroy Gold Corporation, July 21 and 26, 1996.



**TABLE 2**  
**MATERIAL REMOVAL RATE (tons/year)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

PERIOD	PIT SOURCE	MINE AREAS				DUMP LOCATIONS						
		TONS MATERIAL	TONS WASTE ROCK	TONS OVBDN	TONS ORE	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
Existing Permit	Lesley Ann OBHT	18,720,000	15,600,000		3,120,000	15,600,000						3,120,000
	Jumbo (\$600) S.Extension											
	SUBTOTAL	18,720,000	15,600,000	0	3,120,000	15,600,000	0	0	0	0	0	3,120,000
1996	Lesley Ann OBHT	16,051,000	13,603,000		2,448,000	13,603,000						2,448,000
	Jumbo (\$600) S.Extension	1,177,000	560,000		617,000			560,000				617,000
	Jumbo (\$600) S.Extension	1,492,000	1,215,000	222,000	55,000			1,437,000				55,000
	SUBTOTAL	18,720,000	15,378,000	222,000	3,120,000	13,603,000	0	1,997,000	0	0	0	3,120,000
1997	Lesley Ann OBHT	9,359,000	6,434,000		2,925,000				3,113,000			2,925,000
	Jumbo (\$600) S.Extension	6,905,000	3,449,000	2,299,000	1,157,000			3,321,000	4,000,000			1,157,000
	Jumbo (\$600) S.Extension							1,748,000				
	SUBTOTAL	16,264,000	9,883,000	2,299,000	4,082,000	0	0	5,069,000	7,113,000	0	0	4,082,000
1998	Lesley Ann OBHT	14,054,000	10,721,000		3,333,000				10,721,000			3,333,000
	Jumbo (\$600) S.Extension	3,410,000	1,731,000	1,100,000	579,000	2,831,000						579,000
	Jumbo (\$600) S.Extension											
	SUBTOTAL	17,464,000	12,452,000	1,100,000	3,912,000	2,831,000	0	0	10,721,000	0	0	3,912,000
1999	Lesley Ann OBHT	14,823,000	10,719,000		4,104,000	6,815,000						4,104,000
	Jumbo (\$600) S.Extension	2,437,000	1,401,000	1,000,000	36,000	2,401,000			3,904,000			36,000
	Jumbo (\$600) S.Extension											
	SUBTOTAL	17,260,000	12,120,000	1,000,000	4,140,000	9,216,000	0	0	3,904,000	0	0	4,140,000
2000	Lesley Ann OBHT	9,373,000	5,567,000		3,806,000	5,567,000						3,806,000
	Jumbo (\$600) S.Extension	7,859,000	2,543,000	5,000,000	316,000	7,543,000						316,000
	Jumbo (\$600) S.Extension											

**TABLE 2**  
**MATERIAL REMOVAL RATE (tons/year)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

PERIOD	PIT SOURCE	MINE AREAS				DUMP LOCATIONS						
		TONS MATERIAL	TONS WASTE ROCK	TONS OVBDN	TONS ORE	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
	SUBTOTAL	17,232,000	8,110,000	5,000,000	4,122,000	13,110,000	0	0	0	0	0	4,122,000
2001	Lesley Ann											
	OBHT	1,881,000	788,000		1,093,000	788,000						1,093,000
	Jumbo	15,993,000	10,290,000	3,212,000	2,491,000	13,502,000						2,491,000
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	17,874,000	11,078,000	3,212,000	3,584,000	14,290,000	0	0	0	0	0	3,584,000
2002	Lesley Ann											
	OBHT	3,000,000	3,000,000			3,000,000						
	Jumbo	4,243,000	1,549,000		2,694,000	1,549,000						2,694,000
	Jumbo (\$600)	4,000,000	2,800,000	1,200,000		3,000,000		1,000,000				
	S.Extension	6,598,000	5,277,000		1,321,000	5,277,000						1,321,000
	SUBTOTAL	17,841,000	12,626,000	1,200,000	4,015,000	12,826,000	0	1,000,000	0	0	0	4,015,000
2003	Lesley Ann											
	OBHT	1,291,000	1,291,000			1,291,000						
	Jumbo	7,798,000	6,428,000		1,370,000	6,428,000						1,370,000
	Jumbo (\$600)											
	S.Extension	8,752,000	7,000,000		1,752,000	7,000,000						1,752,000
	SUBTOTAL	17,841,000	14,719,000	0	3,122,000	14,719,000	0	0	0	0	0	3,122,000
2004	Lesley Ann											
	OBHT	5,336,000	4,432,000		904,000	4,432,000						904,000
	Jumbo											
	Jumbo (\$600)											
	S.Extension	12,503,000	10,000,000		2,503,000	7,000,000				3,000,000		2,503,000
	SUBTOTAL	17,839,000	14,432,000	0	3,407,000	11,432,000	0	0	0	3,000,000	0	3,407,000
2005	Lesley Ann											
	OBHT	5,336,000	4,432,000		904,000					4,432,000		904,000
	Jumbo											
	Jumbo (\$600)											
	S.Extension	12,503,000	10,000,000		2,503,000					10,000,000		2,503,000
	SUBTOTAL	17,839,000	14,432,000	0	3,407,000	0	0	0	0	14,432,000	0	3,407,000
2006	Lesley Ann											
	OBHT	7,944,000	6,598,000		1,346,000					6,598,000		1,346,000
	Jumbo											
	Jumbo (\$600)											



**TABLE 2**  
**MATERIAL REMOVAL RATE (tons/year)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

PERIOD	PIT SOURCE	MINE AREAS				DUMP LOCATIONS						
		TONS MATERIAL	TONS WASTE ROCK	TONS OVBDN	TONS ORE	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
	S.Extension	9,899,000	7,917,000		1,982,000					7,917,000		1,982,000
	SUBTOTAL	17,843,000	14,515,000	0	3,328,000	0	0	0	0	14,515,000	0	3,328,000
2007	Lesley Ann											
	OBHT											
	Jumbo											
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	17,843,000	14,820,000	0	3,023,000	0	0	0	14,820,000	0	0	3,023,000
2008	Lesley Ann											
	OBHT											
	Jumbo											
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	17,843,000	14,820,000	0	3,023,000	0	0	0	0	0	14,820,000	3,023,000
2009	Lesley Ann											
	OBHT											
	Jumbo											
	Jumbo (\$600)											
	S.Extension											
	SUBTOTAL	13,799,000	11,461,000	0	2,338,000	0	0	0	0	0	11,461,000	2,338,000
<b>TOTALS</b>		243,502,000	180,846,000	14,033,000	48,623,000	92,027,000	0	8,066,000	36,558,000	31,947,000	26,281,000	48,623,000

Source: Information provided in personal communications from Mr. C. Mitchell, Viceroy Gold Corporation, July 21 and 26, 1996.

**TABLE 3**  
**ONE-WAY HAUL ROAD DISTANCES (feet)**  
**PROPOSED ACTION**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
Existing Permit	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	7,500						4,750
1996	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	8,600	8,600	4,300 2,500				7,000 8,500 6,700
1997	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension			5,200 3,400	6,700 4,900			8,500 6,700
1998	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension			6,800 4,800	5,700 5,900			9,400 7,700
1999	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension			7,100 4,800	5,700			9,400 7,700
2000	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension			6,600	6,200			9,400 9,100
2001	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension			7,900	6,700			9,400 8,900
2002	Lesley Ann OBHT Jumbo Jumbo (\$600)			4,000 4,000 4,000				9,600 9,600



**TABLE 3**  
**ONE-WAY HAUL ROAD DISTANCES (feet)**  
**PROPOSED ACTION**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
	S.Extension	10,600						8,000
2003	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	10,600		7,500 5,400				9,600 8,000
2004	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	10,900		9,000		6,300		10,000 8,000
2005	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension					4,700 6,300		9,000 8,000
2006	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension					4,700 6,300		9,000 8,000
2007	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension				6,800			8,000
2008	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension						6,800	8,000
2009	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension						6,800	8,000

Source: Haul road distances derived from site maps and other information provided in personal communications from Mr. C. Mitchell, Viceroy Gold Corporation, July 21 and 26, 1996.

**TABLE 4**  
**ONE-WAY HAUL ROAD DISTANCES (feet)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
Existing Permit	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	7,500						4,750
1996	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	8,600	8,600	4,300 2,500				7,000 8,500 6,700
1997	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension			5,200 3,400	6,700 4,900			8,500 6,700
1998	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	10,300			5,700			9,400 7,700
1999	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	8,500 10,300			5,700			9,400 7,700
2000	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	10,000 10,800						9,400 8,100
2001	Lesley Ann OBHT Jumbo Jumbo (\$600) S.Extension	10,500 13,500						9,400 8,900
2002	Lesley Ann OBHT Jumbo Jumbo (\$600)	16,900 14,200 14,200		4,000				9,600 9,600



**TABLE 4**  
**ONE-WAY HAUL ROAD DISTANCES (feet)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE
	S.Extension	12,600						8,000
2003	Lesley Ann							
	OBHT	20,400						
	Jumbo	15,700						9,600
	Jumbo (\$600)							
	S.Extension	14,100						8,000
2004	Lesley Ann							
	OBHT	10,100						10,000
	Jumbo							
	Jumbo (\$600)							
	S.Extension	15,300				6,300		8,000
2005	Lesley Ann							
	OBHT					4,700		9,000
	Jumbo							
	Jumbo (\$600)							
	S.Extension					6,300		8,000
2006	Lesley Ann							
	OBHT					4,700		9,000
	Jumbo							
	Jumbo (\$600)							
	S.Extension					6,300		8,000
2007	Lesley Ann							
	OBHT				6,800			
	Jumbo							
	Jumbo (\$600)							
	S.Extension							8,000
2008	Lesley Ann							
	OBHT						6,800	
	Jumbo							
	Jumbo (\$600)							
	S.Extension							8,000
2008	Lesley Ann							
	OBHT						6,800	
	Jumbo							
	Jumbo (\$600)							
	S.Extension							8,000

Source: Haul road distances derived from site maps and other information provided in personal communications from Mr. C. Mitchell, Viceroy Gold Corporation, July 21 and 26, 1996.

**TABLE 5**  
**HAUL TRUCK VEHICLE MILES TRAVELED (round trip)**  
**PROPOSED ACTION**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE	TOTALS
	SUBTOTAL	176,566	0	107,942	0	0	0	114,995	399,503
2003	Lesley Ann OBHT			30,563					0
	Jumbo			109,568				41,515	30,563
	Jumbo (\$600)								151,083
	S.Extension	234,217						44,242	0
	SUBTOTAL	234,217	0	140,131	0	0	0	85,757	278,459
2004	Lesley Ann OBHT			125,909					0
	Jumbo							28,535	154,444
	Jumbo (\$600)								0
	S.Extension	240,846				59,659		63,207	0
	SUBTOTAL	240,846	0	125,909	0	59,659	0	91,742	363,712
2005	Lesley Ann OBHT								0
	Jumbo					65,753		25,682	91,435
	Jumbo (\$600)								0
	S.Extension					198,864		63,207	0
	SUBTOTAL	0	0	0	0	264,617	0	88,889	262,071
2006	Lesley Ann OBHT								0
	Jumbo					97,887		38,239	136,126
	Jumbo (\$600)								0
	S.Extension					157,440		50,051	0
	SUBTOTAL	0	0	0	0	255,327	0	88,290	207,491
2007	Lesley Ann OBHT								0
	Jumbo				318,106			76,338	394,444
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	0	318,106	0	0	76,338	0
2008	Lesley Ann OBHT								0
	Jumbo						318,106	76,338	394,444
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	0	0	0	318,106	76,338	0
2009	Lesley Ann OBHT								0
	Jumbo						246,006	59,040	305,046
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	0	0	0	246,006	59,040	0
<b>TOTALS</b>		1,020,902	0	1,333,989	677,746	579,603	564,112	1,316,184	5,492,536

NOTE: Vehicle miles traveled (VMT) based on data summarized in Tables 1 and 3.



**TABLE 6**  
**HAUL TRUCK VEHICLE MILES TRAVELED (round trip)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE	TOTALS
Existing Permit	Lesley Ann	369,318						46,780	416,098
	OBHT								0
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	369,318	0	0	0	0	0	46,780	416,098
1996	Lesley Ann	369,273						54,091	423,364
	OBHT			7,601				16,555	24,156
	Jumbo			11,340				1,163	12,503
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	369,273	0	18,941	0	0	0	71,809	460,023
1997	Lesley Ann				0				0
	OBHT			54,511	84,596			78,480	217,587
	Jumbo			18,760				24,469	43,229
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	73,271	84,596	0	0	102,949	260,816
1998	Lesley Ann								0
	OBHT				192,897			98,896	291,793
	Jumbo	92,043						14,073	106,116
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	92,043	0	0	192,897	0	0	112,969	397,909
1999	Lesley Ann								0
	OBHT	182,852			70,242			121,773	374,867
	Jumbo	78,063						875	78,938
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	260,915	0	0	70,242	0	0	122,648	453,805
2000	Lesley Ann								0
	OBHT	175,726						112,931	288,657
	Jumbo	257,148						8,080	265,228
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	432,874	0	0	0	0	0	121,011	553,885
2001	Lesley Ann								0
	OBHT	26,117						32,431	58,548
	Jumbo	575,369						69,981	645,350
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	601,486	0	0	0	0	0	102,412	703,898
2002	Lesley Ann								0
	OBHT	160,038							160,038
	Jumbo	69,431						81,636	151,067
	Jumbo (\$600)	134,470		12,626					147,096
	S.Extension	209,881						33,359	243,240

**TABLE 6**  
**HAUL TRUCK VEHICLE MILES TRAVELED (round trip)**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

YEAR	ORIGIN	SOUTH DUMP	WEST DUMP	NORTH DUMP	LESLEY ANN PIT	JUMBO PIT	SOUTH EXT PIT	CRUSHER OR STOCKPILE	TOTALS
	SUBTOTAL	573,820	0	12,626	0	0	0	114,995	701,441
2003	Lesley Ann								0
	OBHT	83,133							83,133
	Jumbo	318,559						41,515	360,074
	Jumbo (\$600)								0
	S.Extension	311,553						44,242	355,795
	SUBTOTAL	713,245	0	0	0	0	0	85,757	799,002
2004	Lesley Ann								0
	OBHT	141,298						28,535	169,833
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension	338,068				59,659		63,207	460,934
	SUBTOTAL	479,366	0	0	0	59,659	0	91,742	630,767
2005	Lesley Ann								0
	OBHT					65,753		25,682	91,435
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension					198,864		63,207	262,071
	SUBTOTAL	0	0	0	0	264,617	0	88,889	353,506
2006	Lesley Ann								0
	OBHT					97,887		38,239	136,126
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension					157,440		50,051	207,491
	SUBTOTAL	0	0	0	0	255,327	0	88,290	343,617
2007	Lesley Ann								0
	OBHT				318,106			76,338	394,444
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	0	318,106	0	0	76,338	394,444
2008	Lesley Ann								0
	OBHT						318,106	76,338	394,444
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	0	0	0	318,106	76,338	394,444
2009	Lesley Ann								0
	OBHT						246,006	59,040	305,046
	Jumbo								0
	Jumbo (\$600)								0
	S.Extension								0
	SUBTOTAL	0	0	0	0	0	246,006	59,040	305,046
<b>TOTALS</b>		3,523,022	0	104,838	665,841	579,603	564,112	1,315,187	6,752,603

NOTE: Vehicle miles traveled (VMT) based on data summarized in Tables 2 and 4.



**TABLE 7**  
**MATERIAL REMOVAL AND HAUL ROAD SUMMARY**  
**PROPOSED ACTION**

PERIOD	MATERIAL REMOVAL (TONS)			HAUL ROAD TRAVEL (VMT)			ESTIMATED HAUL ROAD EMISSIONS		NET EMISSION INCREASE	INCREASE > SIGNIFICANCE THRESHOLD?
	OVBDN & WASTE ROCK	ORE	TOTAL	OVBDN & WASTE ROCK	ORE	TOTAL	ton/yr	lb/day	ton/yr	
Existing Permit	15,600,000	3,120,000	18,720,000	369,318	46,780	416,098	3	21	0	--
1996	15,600,000	3,120,000	18,720,000	388,214	71,809	460,023	3	23	0	NO
1997	12,182,000	4,082,000	16,264,000	157,867	102,949	260,816	2	13	(1)	NO
1998	13,552,000	3,912,000	17,464,000	267,652	112,969	380,621	3	19	0	NO
1999	13,120,000	4,140,000	17,260,000	255,728	122,648	378,376	3	19	0	NO
2000	13,110,000	4,122,000	17,232,000	266,096	122,008	388,104	3	19	0	NO
2001	14,290,000	3,584,000	17,874,000	353,363	102,412	455,775	3	23	0	NO
2002	13,826,000	4,015,000	17,841,000	284,508	114,995	399,503	3	20	0	NO
2003	14,719,000	3,122,000	17,841,000	374,348	85,757	460,105	3	23	0	NO
2004	14,432,000	3,407,000	17,839,000	426,414	91,742	518,156	4	26	1	NO
2005	14,432,000	3,407,000	17,839,000	264,617	88,889	353,506	3	18	0	NO
2006	14,515,000	3,328,000	17,843,000	255,327	88,290	343,617	3	17	(1)	NO
2007	14,820,000	3,023,000	17,843,000	318,106	76,338	394,444	3	20	0	NO
2008	14,820,000	3,023,000	17,843,000	318,106	76,338	394,444	3	20	0	NO
2009	11,461,000	2,338,000	13,799,000	246,006	59,040	305,046	2	15	(1)	NO

NOTES: - Estimated haul road fugitive PM10 emissions based on haul road emission factor for controlled emissions from "Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project." Prepared by MDAQMD; March 15, 1991.  
- PM10 significance threshold is a net emission increase of more than 15 tons per year (MDAQMD 1995).

**TABLE 8**  
**MATERIAL REMOVAL AND HAUL ROAD SUMMARY**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE**

PERIOD	MATERIAL REMOVAL (TONS)			HAUL ROAD TRAVEL (VMT)			ESTIMATED HAUL ROAD EMISSIONS		NET EMISSION INCREASE	INCREASE > SIGNIFICANCE THRESHOLD?
	OVBDN & WASTE ROCK	ORE	TOTAL	OVBDN & WASTE ROCK	ORE	TOTAL	ton/yr	lb/day	ton/yr	
Existing Permit	15,600,000	3,120,000	18,720,000	369,318	46,780	416,098	3	21	0	--
1996	15,600,000	3,120,000	18,720,000	388,214	71,809	460,023	3	23	0	NO
1997	12,182,000	4,082,000	16,264,000	157,867	102,949	260,816	2	13	(1)	NO
1998	13,552,000	3,912,000	17,464,000	284,940	112,969	397,909	3	20	0	NO
1999	13,120,000	4,140,000	17,260,000	331,157	122,648	453,805	3	23	0	NO
2000	13,110,000	4,122,000	17,232,000	432,874	121,011	553,885	4	28	1	NO
2001	14,290,000	3,584,000	17,874,000	601,486	102,412	703,898	5	35	2	NO
2002	13,826,000	4,015,000	17,841,000	586,446	114,995	701,441	5	35	2	NO
2003	14,719,000	3,122,000	17,841,000	713,245	85,757	799,002	6	40	3	NO
2004	14,432,000	3,407,000	17,839,000	539,025	91,742	630,767	5	32	2	NO
2005	14,432,000	3,407,000	17,839,000	264,617	88,889	353,506	3	18	0	NO
2006	14,515,000	3,328,000	17,843,000	255,327	88,290	343,617	3	17	(1)	NO
2007	14,820,000	3,023,000	17,843,000	318,106	76,338	394,444	3	20	0	NO
2008	14,820,000	3,023,000	17,843,000	318,106	76,338	394,444	3	20	0	NO
2009	11,461,000	2,338,000	13,799,000	246,006	59,040	305,046	2	15	(1)	NO

NOTES: - Estimated haul road fugitive PM10 emissions based on haul road emission factor for controlled emissions from "Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project." Prepared by MDAQMD; March 15, 1991.  
 - PM10 significance threshold is a net emission increase of more than 15 tons per year (MDAQMD 1995).



**TABLE 9**  
**CASTLE MOUNTAIN MINE EMISSION RATES**  
**FINAL NEW SOURCE REVIEW -- MARCH 1991**

SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROC	NOx	SO2	CO	PM10	ROC	NOx	SO2	CO	PM10
<b>ORE REMOVAL - Fugitive PM Emissions</b>										
Drilling	-	-	-	-	11.7	-	-	-	-	1.8
Blasting	-	-	-	-	25	-	-	-	-	3.9
Material Loading From Pit	-	-	-	-	132	-	-	-	-	19.8
Road Dust - Pit to Crusher	-	-	-	-	3.8	-	-	-	-	0.6
Road Dust - Pit to O/B Disposal Area	-	-	-	-	30.2	-	-	-	-	4.5
Dumping to OB/LG Disposal Area	-	-	-	-	110	-	-	-	-	16.5
Overburden Disposal Area - Wind Erosion	-	-	-	-	9.5	-	-	-	-	1.7
<i>Subtotal, Mining</i>	-	-	-	-	322.2	-	-	-	-	48.8
<b>ORE PROCESSING</b>										
Ore Dumping to Primary Crusher	-	-	-	-	6.9	-	-	-	-	0.9
Primary Crusher	-	-	-	-	27.5	-	-	-	-	3.8
Ore Transfer to Primary Stockpile	-	-	-	-	1.4	-	-	-	-	0.2
Primary Stockpile - Wind Erosion	-	-	-	-	0.3	-	-	-	-	0.1
Secondary Crushing Unit	-	-	-	-	15.5	-	-	-	-	2.1
Ore Transfer - Conv #6 to Conv #13	-	-	-	-	0.03	-	-	-	-	0
Ore Transfer - Conv #7 to Surge Bin	-	-	-	-	0.2	-	-	-	-	0.03
Ore Transfer - Surge Bin to Conv. #8A/B	-	-	-	-	0.2	-	-	-	-	0.03
Tertiary Crushing Unit	-	-	-	-	15.5	-	-	-	-	2.1
Ore Transfer - Conv #9 to Conv #13	-	-	-	-	0.2	-	-	-	-	0.03
Ore Transfer - Conv #13 to Splitter	-	-	-	-	1.2	-	-	-	-	0.17
Ore Transfer - Sampling Tower	-	-	-	-	0.07	-	-	-	-	0.01
Ore Transfer - Rejects to C#14	-	-	-	-	0.013	-	-	-	-	0
Ore Transfer - Sampling T to C#15	-	-	-	-	0.9	-	-	-	-	0.01
Ore Transfer - C#15 to Bypass S/P	-	-	-	-	17.7	-	-	-	-	0.12
Bypass Stockpile - Wind Erosion	-	-	-	-	1.3	-	-	-	-	0.2
Bypass S/P - Ore Dumping to Conv #16	-	-	-	-	12.1	-	-	-	-	0.08
Ore Transfer - Conv #16 to Conv #14	-	-	-	-	6.1	-	-	-	-	0.08
Ore Transfer - Sampling T to Conv #14	-	-	-	-	0.9	-	-	-	-	0.2
Lime Silo - Unloading	-	-	-	-	0.02	-	-	-	-	0
Cement Silo - Unloading	-	-	-	-	0.1	-	-	-	-	0.01
Calcium Cyanide Silo - Unloading	-	-	-	-	0.03	-	-	-	-	0
Lime Application	-	-	-	-	0.01	-	-	-	-	0
Cement Application	-	-	-	-	0.06	-	-	-	-	0.01
Ore Transfer - C #14 to Agglom Belt #1	-	-	-	-	6.9	-	-	-	-	0.94
Ore Transfer - Agglom Belt #1 to Drum	-	-	-	-	6.9	-	-	-	-	0.94
Ore Transfer - Drum to Agglom Belt #2	-	-	-	-	1.1	-	-	-	-	0.15
Ore Transfer - A Belt #2 to Port C #2	-	-	-	-	1.1	-	-	-	-	0.15
Ore Transfer - 22 Port Cs to R Stackers	-	-	-	-	24.4	-	-	-	-	3.32
Ore Transfer - R Stacker to Leach Pad	-	-	-	-	2.2	-	-	-	-	0.3
<i>Subtotal, Ore Processing</i>	-	-	-	-	150.833	-	-	-	-	15.98
<b>MISCELLANEOUS EQUIPMENT</b>										
Propane-powered Generator	235	352.5	0.5	587.4	2.3	42.9	64.3	0.1	107.2	0.4
Propane-fired Equipment	0.9	17.1	0	3.5	0.3	0.2	3.1	0	0.6	0.1
Diesel Storage and Transfer Losses	0.4	-	-	-	-	0.07	-	-	-	-
<i>Subtotal, Miscellaneous Equipment</i>	236.3	369.6	0.5	590.9	2.6	43.17	67.4	0.1	107.8	0.5
<b>MOBILE SOURCES</b>										
Diesel	79.5	2458.5	216.5	453.5	76.3	12.5	386.7	34.1	71.3	12
Gasoline	2.4	1.3	-	2	-	0.5	0.2	-	0.4	-
<i>Subtotal, Mobile Sources</i>	81.9	2459.8	216.5	455.5	76.3	13	386.9	34.1	71.7	12
<b>TOTAL EMISSIONS</b>	318.2	2829.4	217	1046.4	551.933	56.17	454.3	34.2	179.5	77.28

Source: Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project. Prepared by MDAQMD; March 15, 1991.

Note: Calculations assume mining rate of 60,000 tons per peak day, 18 million tons per year; ore processing rate of 11,000 tons per peak day, 3 million tons per year.

**TABLE 10**  
**CASTLE MOUNTAIN MINE EMISSION RATES**  
**1993 PERMIT CONDITIONS**

SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROC	NOx	SO2	CO	PM10	ROC	NOx	SO2	CO	PM10
<b>ORE REMOVAL - Fugitive PM Emissions</b>										
Drilling	-	-	-	-	11.7	-	-	-	-	1.8
Blasting	-	-	-	-	25	-	-	-	-	3.9
Material Loading From Pit	-	-	-	-	132	-	-	-	-	19.8
Road Dust - Pit to Crusher	-	-	-	-	2.4	-	-	-	-	0.3
Road Dust - Pit to O/B Disposal Area	-	-	-	-	18.6	-	-	-	-	2.7
Dumping to OBLG Disposal Area	-	-	-	-	110	-	-	-	-	16.5
Overburden Disposal Area - Wind Erosion	-	-	-	-	9.5	-	-	-	-	1.7
<i>Subtotal, Mining</i>	-	-	-	-	309.2	-	-	-	-	46.7
<b>ORE PROCESSING - ORIGINAL EQUIPMENT</b>										
Ore Dumping to Primary Crusher	-	-	-	-	9.4	-	-	-	-	1.4
Primary Crusher	-	-	-	-	37.4	-	-	-	-	5.7
Ore Transfer to Primary Stockpile	-	-	-	-	1.9	-	-	-	-	0.3
Primary Stockpile - Wind Erosion	-	-	-	-	0.4	-	-	-	-	0.2
Secondary Crushing Unit	-	-	-	-	21.1	-	-	-	-	3.2
Ore Transfer - Conv #6 to Conv #13	-	-	-	-	0	-	-	-	-	0
Ore Transfer - Conv #7 to Surge Bin	-	-	-	-	0.3	-	-	-	-	0
Ore Transfer - Surge Bin to Conv. #8A/B	-	-	-	-	0.3	-	-	-	-	0
Tertiary Crushing Unit	-	-	-	-	21.1	-	-	-	-	3.2
Ore Transfer - Conv #9 to Conv #13	-	-	-	-	0.3	-	-	-	-	0
Ore Transfer - Conv #13 to Splitter	-	-	-	-	1.6	-	-	-	-	0.3
Ore Transfer - Sampling Tower	-	-	-	-	0.1	-	-	-	-	0
Ore Transfer - Rejects to C#14	-	-	-	-	0	-	-	-	-	0
Ore Transfer - Sampling T to C#15	-	-	-	-	1.2	-	-	-	-	0
Ore Transfer - C#15 to Bypass S/P	-	-	-	-	24.1	-	-	-	-	0.2
Bypass Stockpile - Wind Erosion	-	-	-	-	1.8	-	-	-	-	0.3
Bypass S/P - Ore Dumping to Conv #16	-	-	-	-	16.5	-	-	-	-	0.1
Ore Transfer - Conv #16 to Conv #14	-	-	-	-	8.3	-	-	-	-	0.1
Ore Transfer - Sampling T to Conv #14	-	-	-	-	1.2	-	-	-	-	0.3
Lime Silo - Unloading	-	-	-	-	0	-	-	-	-	0
Cement Silo - Unloading	-	-	-	-	0.1	-	-	-	-	0
Calcium Cyanide Silo - Unloading	-	-	-	-	0	-	-	-	-	0
Lime Application	-	-	-	-	0	-	-	-	-	0
Cement Application	-	-	-	-	0.1	-	-	-	-	0
Ore Transfer - C #14 to Agglom Belt #1	-	-	-	-	9.4	-	-	-	-	1.4
Ore Transfer - Agglom Belt #1 to Drum	-	-	-	-	9.4	-	-	-	-	1.4
Ore Transfer - Drum to Agglom Belt #2	-	-	-	-	1.5	-	-	-	-	0.2
Ore Transfer - A Belt #2 to Port C #2	-	-	-	-	1.5	-	-	-	-	0.2
Ore Transfer - 22 Port Cs to R Stackers	-	-	-	-	33.2	-	-	-	-	5
Ore Transfer - R Stacker to Leach Pad	-	-	-	-	3	-	-	-	-	0.5
<i>Subtotal, Ore Processing - Original</i>	-	-	-	-	205.2	-	-	-	-	24
<b>ORE PROCESSING - COMMINUTION CIRCUIT (ADDED 1993)</b>										
Ore Transfer - Conv #21 to Fine Ore S/P	-	-	-	-	1.88	-	-	-	-	0.05
Ore Transfer - Conv #22 to Mill	-	-	-	-	0.125	-	-	-	-	0.02
Wind Erosion - Fine Ore S/P	-	-	-	-	0.26	-	-	-	-	0.05
<i>Subtotal, Ore Processing - Comminution</i>	-	-	-	-	2.265	-	-	-	-	0.12
<b>MISCELLANEOUS EQUIPMENT</b>										
Propane-powered Generator	2.4	3.5	0	5.9	0	0.4	0.6	0	1.1	0
Propane-fired Equipment	0.9	17.1	0	3.5	0.3	0.2	3.1	0	0.6	0.1
Diesel Storage and Transfer Losses	0.4	-	-	-	-	0.07	-	-	-	-
<i>Subtotal, Miscellaneous Equipment</i>	3.7	20.6	0	9.4	0.3	0.67	3.7	0	1.7	0.1
<b>MOBILE SOURCES</b>										
Diesel - Mining Equipment	50.1	1548.9	136.4	285.7	48.1	7.9	243.6	21.5	44.9	7.6
Diesel - Haul Trucks	21	639.3	11.6	148.5	17.8	3.3	99.7	1.8	23.2	2.8
Gasoline	2.4	1.3	-	2	-	0.5	0.2	-	0.4	-
<i>Subtotal, Mobile Sources</i>	73.8	2189.5	148	436.2	65.9	11.7	343.5	23.3	68.5	10.4
<b>TOTAL EMISSIONS</b>	<b>77.5</b>	<b>2210.1</b>	<b>148</b>	<b>445.6</b>	<b>582.9</b>	<b>12.4</b>	<b>347.2</b>	<b>23.3</b>	<b>70.2</b>	<b>81.3</b>

Source: Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project. Prepared by Viceroy Gold Corporation; April 14, 1993.

Note: Calculations assume mining rate of 60,000 tons per peak day, 18 million tons per year; ore processing rate of 15,000 tons per peak day, 4.5 million tons per year; elimination of 5 diesel generator sets (versus 1991 emission inventory); substitution of 0.05 percent sulfur content diesel fuel (1991 emission inventory assumed 0.2 percent sulfur content); substitution of 72-ton haul trucks (original EIR) with 120-ton haul trucks (actually purchased/permitted).



**TABLE 11**  
**CASTLE MOUNTAIN MINE EMISSION RATES**  
**PROPOSED ACTION - 2004 OPERATIONS**

SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROC	NOx	SO2	CO	PM10	ROC	NOx	SO2	CO	PM10
<b>ORE REMOVAL - Fugitive PM Emissions</b>										
Drilling	-	-	-	-	11.7	-	-	-	-	1.8
Blasting	-	-	-	-	25	-	-	-	-	3.9
Material Loading From Pit	-	-	-	-	132	-	-	-	-	19.8
Road Dust - Pit to Crusher	-	-	-	-	4.6	-	-	-	-	0.7
Road Dust - Pit to O/B Disposal Area	-	-	-	-	21.4	-	-	-	-	3.3
Dumping to O/B/LG Disposal Area	-	-	-	-	110	-	-	-	-	16.5
Overburden Disposal Area - Wind Erosion	-	-	-	-	9.5	-	-	-	-	1.7
<i>Subtotal, Mining</i>	-	-	-	-	314.2	-	-	-	-	47.7
<b>ORE PROCESSING - ORIGINAL EQUIPMENT</b>										
Ore Dumping to Primary Crusher	-	-	-	-	9.4	-	-	-	-	1.4
Primary Crusher	-	-	-	-	37.4	-	-	-	-	5.7
Ore Transfer to Primary Stockpile	-	-	-	-	1.9	-	-	-	-	0.3
Primary Stockpile - Wind Erosion	-	-	-	-	0.4	-	-	-	-	0.2
Secondary Crushing Unit	-	-	-	-	21.1	-	-	-	-	3.2
Ore Transfer - Conv #6 to Conv #13	-	-	-	-	0	-	-	-	-	0
Ore Transfer - Conv #7 to Surge Bin	-	-	-	-	0.3	-	-	-	-	0
Ore Transfer - Surge Bin to Conv. #8A/B	-	-	-	-	0.3	-	-	-	-	0
Tertiary Crushing Unit	-	-	-	-	21.1	-	-	-	-	3.2
Ore Transfer - Conv #9 to Conv #13	-	-	-	-	0.3	-	-	-	-	0
Ore Transfer - Conv #13 to Splitter	-	-	-	-	1.6	-	-	-	-	0.3
Ore Transfer - Sampling Tower	-	-	-	-	0.1	-	-	-	-	0
Ore Transfer - Rejects to C#14	-	-	-	-	0	-	-	-	-	0
Ore Transfer - Sampling T to C#15	-	-	-	-	1.2	-	-	-	-	0
Ore Transfer - C#15 to Bypass S/P	-	-	-	-	24.1	-	-	-	-	0.2
Bypass Stockpile - Wind Erosion	-	-	-	-	1.8	-	-	-	-	0.3
Bypass S/P - Ore Dumping to Conv #16	-	-	-	-	16.5	-	-	-	-	0.1
Ore Transfer - Conv #16 to Conv #14	-	-	-	-	8.3	-	-	-	-	0.1
Ore Transfer - Sampling T to Conv #14	-	-	-	-	1.2	-	-	-	-	0.3
Lime Silo - Unloading	-	-	-	-	0	-	-	-	-	0
Cement Silo - Unloading	-	-	-	-	0.1	-	-	-	-	0
Calcium Cyanide Silo - Unloading	-	-	-	-	0	-	-	-	-	0
Lime Application	-	-	-	-	0	-	-	-	-	0
Cement Application	-	-	-	-	0.1	-	-	-	-	0
Ore Transfer - C #14 to Agglom Belt #1	-	-	-	-	9.4	-	-	-	-	1.4
Ore Transfer - Agglom Belt #1 to Drum	-	-	-	-	9.4	-	-	-	-	1.4
Ore Transfer - Drum to Agglom Belt #2	-	-	-	-	1.5	-	-	-	-	0.2
Ore Transfer - A Belt #2 to Port C #2	-	-	-	-	1.5	-	-	-	-	0.2
Ore Transfer - 22 Port Cs to R Stackers	-	-	-	-	33.2	-	-	-	-	5
Ore Transfer - R Stacker to Leach Pad	-	-	-	-	3	-	-	-	-	0.5
<i>Subtotal, Ore Processing - Original</i>	-	-	-	-	205.2	-	-	-	-	24
<b>ORE PROCESSING - COMMINUTION CIRCUIT (ADDED 1993)</b>										
Ore Transfer - Conv #21 to Fine Ore S/P	-	-	-	-	1.88	-	-	-	-	0.05
Ore Transfer - Conv #22 to Mill	-	-	-	-	0.125	-	-	-	-	0.02
Wind Erosion - Fine Ore S/P	-	-	-	-	0.26	-	-	-	-	0.05
<i>Subtotal, Ore Processing - Comminution</i>	-	-	-	-	2.265	-	-	-	-	0.12
<b>MISCELLANEOUS EQUIPMENT</b>										
Propane-powered Generator	2.4	3.5	0	5.9	0	0.4	0.6	0	1.1	0
Propane-fired Equipment	0.9	17.1	0	3.5	0.3	0.2	3.1	0	0.6	0.1
Diesel Storage and Transfer Losses	0.4	-	-	-	-	0.07	-	-	-	-
<i>Subtotal, Miscellaneous Equipment</i>	3.7	20.6	0	9.4	0.3	0.67	3.7	0	1.7	0.1
<b>MOBILE SOURCES</b>										
Diesel - Mining Equipment	50.1	1548.9	136.4	285.7	48.1	7.9	243.6	21.5	44.9	7.6
Diesel - Haul Trucks	27	796.1	14.4	184.9	22.1	4.1	124.2	2.2	28.8	3.5
Gasoline	2.4	1.3	-	2	-	0.5	0.2	-	0.4	-
<i>Subtotal, Mobile Sources</i>	79.1	2346.3	150.8	472.6	70.2	12.5	368	23.7	74.1	11.1
<b>TOTAL EMISSIONS</b>	82.8	2366.9	150.8	482	592.2	13.2	371.7	23.7	75.8	83

Source: Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project. Prepared by Viceroy Gold Corporation; April 14, 1993.

Note: Calculations assume mining rate of 60,000 tons per peak day, 18 million tons per year; ore processing rate of 15,000 tons per peak day, 4.5 million tons per year; elimination of 5 diesel generator sets (versus 1991 emission inventory); substitution of 0.05 percent sulfur content diesel fuel (1991 emission inventory assumed 0.2 percent sulfur content); substitution of 72-ton haul trucks (original EIR) with 120-ton haul trucks (actually purchased/permitted). Road dust and mobile diesel exhaust emissions based on VMT data summarized in Table 5 for the project year having maximum haul vehicle travel (i.e., 2004).

**TABLE 12**  
**CASTLE MOUNTAIN MINE EMISSION RATES**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE - 2003 OPERATIONS**

SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROC	NOx	SO2	CO	PM10	ROC	NOx	SO2	CO	PM10
<b>ORE REMOVAL - Fugitive PM Emissions</b>										
Drilling	-	-	-	-	11.7	-	-	-	-	1.8
Blasting	-	-	-	-	25	-	-	-	-	3.9
Material Loading From Pit	-	-	-	-	132	-	-	-	-	19.8
Road Dust - Pit to Crusher	-	-	-	-	4.3	-	-	-	-	0.6
Road Dust - Pit to O/B Disposal Area	-	-	-	-	35.7	-	-	-	-	5.4
Dumping to OB/LG Disposal Area	-	-	-	-	110	-	-	-	-	16.5
Overburden Disposal Area - Wind Erosion	-	-	-	-	9.5	-	-	-	-	1.7
<i>Subtotal, Mining</i>	-	-	-	-	328.2	-	-	-	-	49.7
<b>ORE PROCESSING - ORIGINAL EQUIPMENT</b>										
Ore Dumping to Primary Crusher	-	-	-	-	9.4	-	-	-	-	1.4
Primary Crusher	-	-	-	-	37.4	-	-	-	-	5.7
Ore Transfer to Primary Stockpile	-	-	-	-	1.9	-	-	-	-	0.3
Primary Stockpile - Wind Erosion	-	-	-	-	0.4	-	-	-	-	0.2
Secondary Crushing Unit	-	-	-	-	21.1	-	-	-	-	3.2
Ore Transfer - Conv #6 to Conv #13	-	-	-	-	0	-	-	-	-	0
Ore Transfer - Conv #7 to Surge Bin	-	-	-	-	0.3	-	-	-	-	0
Ore Transfer - Surge Bin to Conv. #8A/B	-	-	-	-	0.3	-	-	-	-	0
Tertiary Crushing Unit	-	-	-	-	21.1	-	-	-	-	3.2
Ore Transfer - Conv #9 to Conv #13	-	-	-	-	0.3	-	-	-	-	0
Ore Transfer - Conv #13 to Splitter	-	-	-	-	1.6	-	-	-	-	0.3
Ore Transfer - Sampling Tower	-	-	-	-	0.1	-	-	-	-	0
Ore Transfer - Rejects to C#14	-	-	-	-	0	-	-	-	-	0
Ore Transfer - Sampling T to C#15	-	-	-	-	1.2	-	-	-	-	0
Ore Transfer - C#15 to Bypass S/P	-	-	-	-	24.1	-	-	-	-	0.2
Bypass Stockpile - Wind Erosion	-	-	-	-	1.8	-	-	-	-	0.3
Bypass S/P - Ore Dumping to Conv #16	-	-	-	-	16.5	-	-	-	-	0.1
Ore Transfer - Conv #16 to Conv #14	-	-	-	-	8.3	-	-	-	-	0.1
Ore Transfer - Sampling T to Conv #14	-	-	-	-	1.2	-	-	-	-	0.3
Lime Silo - Unloading	-	-	-	-	0	-	-	-	-	0
Cement Silo - Unloading	-	-	-	-	0.1	-	-	-	-	0
Calcium Cyanide Silo - Unloading	-	-	-	-	0	-	-	-	-	0
Lime Application	-	-	-	-	0	-	-	-	-	0
Cement Application	-	-	-	-	0.1	-	-	-	-	0
Ore Transfer - C #14 to Agglom Belt #1	-	-	-	-	9.4	-	-	-	-	1.4
Ore Transfer - Agglom Belt #1 to Drum	-	-	-	-	9.4	-	-	-	-	1.4
Ore Transfer - Drum to Agglom Belt #2	-	-	-	-	1.5	-	-	-	-	0.2
Ore Transfer - A Belt #2 to Port C #2	-	-	-	-	1.5	-	-	-	-	0.2
Ore Transfer - 22 Port Cs to R Stackers	-	-	-	-	33.2	-	-	-	-	5
Ore Transfer - R Stacker to Leach Pad	-	-	-	-	3	-	-	-	-	0.5
<i>Subtotal, Ore Processing - Original</i>	-	-	-	-	205.2	-	-	-	-	24
<b>ORE PROCESSING - COMMINUTION CIRCUIT (ADDED 1993)</b>										
Ore Transfer - Conv #21 to Fine Ore S/P	-	-	-	-	1.88	-	-	-	-	0.05
Ore Transfer - Conv #22 to Mill	-	-	-	-	0.125	-	-	-	-	0.02
Wind Erosion - Fine Ore S/P	-	-	-	-	0.26	-	-	-	-	0.05
<i>Subtotal, Ore Processing - Comminution</i>	-	-	-	-	2.265	-	-	-	-	0.12
<b>MISCELLANEOUS EQUIPMENT</b>										
Propane-powered Generator	2.4	3.5	0	5.9	0	0.4	0.6	0	1.1	0
Propane-fired Equipment	0.9	17.1	0	3.5	0.3	0.2	3.1	0	0.6	0.1
Diesel Storage and Transfer Losses	0.4	-	-	-	-	0.07	-	-	-	-
<i>Subtotal, Miscellaneous Equipment</i>	3.7	20.6	0	9.4	0.3	0.67	3.7	0	1.7	0.1
<b>MOBILE SOURCES</b>										
Diesel - Mining Equipment	50.1	1548.9	136.4	285.7	48.1	7.9	243.6	21.5	44.9	7.6
Diesel - Haul Trucks	41	1227.5	22.2	285.1	34.1	6.4	191.5	3.5	44.5	5.3
Gasoline	2.4	1.3	-	2	-	0.5	0.2	-	0.4	-
<i>Subtotal, Mobile Sources</i>	93.5	2777.7	158.6	572.8	82.2	14.8	435.3	25	89.8	12.9
<b>TOTAL EMISSIONS</b>	97.2	2798.3	158.6	582.2	618.2	15.5	439	25	91.5	86.8

Source: Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project. Prepared by Viceroy Gold Corporation; April 14, 1993.

Note: Calculations assume mining rate of 60,000 tons per peak day, 18 million tons per year; ore processing rate of 15,000 tons per peak day, 4.5 million tons per year; elimination of 5 diesel generator sets (versus 1991 emission inventory); substitution of 0.05 percent sulfur content diesel fuel (1991 emission inventory assumed 0.2 percent sulfur content); substitution of 72-ton haul trucks (original EIR) with 120-ton haul trucks (actually purchased/permitted). Road dust and mobile diesel exhaust emissions based on VMT data summarized in Table 6 for the project year having maximum haul vehicle travel (i.e., 2003).



**TABLE 13**  
**SUMMARY - ESTIMATED AIR CONTAMINANT EMISSIONS**  
**EXISTING PERMIT LIMIT**

EMISSION SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROG	NOx	SOx	CO	PM10	ROG	NOx	SOx	CO	PM10
<b>Onsite Stationary Exhaust and Fugitive Sources</b>										
Ore Processing Equipment					195.6					22.2
Emergency Generator, Misc. Equipment	3.3	20.6	0.0	9.4	0.3	0.6	3.7	0.0	1.7	0.1
Diesel Storage and Transfer Losses	0.4					0.1				
<b>Onsite Mobile Exhaust Sources</b>										
Diesel-Powered Equipment Exhaust	71.4	2,188.2	148.0	434.2	65.9	11.2	343.3	23.3	68.1	10.4
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--	0.5	0.2	--	0.4	--
<b>Onsite Fugitive Dust Sources</b>										
Mining Operations (Drilling, Blasting, Loading)					168.7					25.5
Haul Roads					21.0					3.0
Ore and Overburden Dumping					119.4					17.9
Wind Erosion (Disturbed Areas, Stockpiles)					12.0					2.3
<b>TOTAL</b>	<b>77.5</b>	<b>2,210.1</b>	<b>148.0</b>	<b>445.6</b>	<b>582.9</b>	<b>12.4</b>	<b>347.2</b>	<b>23.3</b>	<b>70.2</b>	<b>81.3</b>

NOTE: Values summarized in this table are based on detailed calculations summarized in Table 10.

**TABLE 14**  
**SUMMARY - ESTIMATED AIR CONTAMINANT EMISSIONS**  
**PROPOSED ACTION - 2004 OPERATIONS**

EMISSION SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROG	NOx	SOx	CO	PM10	ROG	NOx	SOx	CO	PM10
<b>Onsite Stationary Exhaust and Fugitive Sources</b>										
Ore Processing Equipment					195.6					22.2
Emergency Generator, Misc. Equipment	3.3	20.6	0.0	9.4	0.3	0.6	3.7	0.0	1.7	0.1
Diesel Storage and Transfer Losses	0.4					0.1				
<b>Onsite Mobile Exhaust Sources</b>										
Diesel-Powered Equipment Exhaust	76.7	2,345.0	150.8	470.6	70.2	12.0	367.8	23.7	73.7	11.1
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--	0.5	0.2	--	0.4	--
<b>Onsite Fugitive Dust Sources</b>										
Mining Operations (Drilling, Blasting, Loading)					168.7					25.5
Haul Roads					26.0					4.0
Ore and Overburden Dumping					119.4					17.9
Wind Erosion (Disturbed Areas, Stockpiles)					12.0					2.3
<b>TOTAL</b>	<b>82.8</b>	<b>2,366.9</b>	<b>150.8</b>	<b>482.0</b>	<b>592.2</b>	<b>13.2</b>	<b>371.7</b>	<b>23.7</b>	<b>75.8</b>	<b>83.0</b>

NOTE: Values summarized in this table are based on detailed calculations summarized in Table 11.



**TABLE 15**  
**SUMMARY - ESTIMATED AIR CONTAMINANT EMISSIONS**  
**SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE - 2003 OPERATIONS**

EMISSION SOURCE	POUNDS PER PEAK DAY					TONS PER YEAR				
	ROG	NOx	SOx	CO	PM10	ROG	NOx	SOx	CO	PM10
<b>Onsite Stationary Exhaust and Fugitive Sources</b>										
Ore Processing Equipment					195.6					22.2
Emergency Generator, Misc. Equipment	3.3	20.6	0.0	9.4	0.3	0.6	3.7	0.0	1.7	0.1
Diesel Storage and Transfer Losses	0.4					0.1				
<b>Onsite Mobile Exhaust Sources</b>										
Diesel-Powered Equipment Exhaust	91.1	2,776.4	158.6	570.8	82.2	14.3	435.1	25.0	89.4	12.9
Gasoline-Powered Equipment Exhaust	2.4	1.3	--	2.0	--	0.5	0.2	--	0.4	--
<b>Onsite Fugitive Dust Sources</b>										
Mining Operations (Drilling, Blasting, Loading)					168.7					25.5
Haul Roads					40.0					6.0
Ore and Overburden Dumping					119.4					17.9
Wind Erosion (Disturbed Areas, Stockpiles)					12.0					2.3
<b>TOTAL</b>	<b>97.2</b>	<b>2,798.3</b>	<b>158.6</b>	<b>582.2</b>	<b>618.2</b>	<b>15.5</b>	<b>439.0</b>	<b>25.0</b>	<b>91.5</b>	<b>86.8</b>

NOTE: Values summarized in this table are based on detailed calculations summarized in Table 12.

**TABLE 16**  
**COMPARISON OF NET EMISSION INCREASES**  
**TO SIGNIFICANCE THRESHOLDS**

Scenario	Estimated Emission Rate (tons/year)				
	ROG	NO <sub>x</sub>	SO <sub>x</sub>	CO	PM <sub>10</sub>
<b>Estimated Emissions</b>					
Existing Permit Limit	12.4	347.2	23.3	70.2	81.3
Proposed Action	13.2	371.7	23.7	75.8	83.0
South Overburden Site Expansion Alternative	15.5	439.0	25.0	91.5	86.8
<b>Significance Thresholds</b>	25.0	25.0	NA	100.0	15.0
<b>Total Project Emissions Greater than Threshold?</b>					
Proposed Action	No	Yes	NA	No	Yes
South Overburden Site Expansion Alternative	No	Yes	NA	No	Yes
<b>Net Emission Increase (Decrease)</b>					
Proposed Action versus Existing Conditions	0.8	24.5	0.4	5.6	1.7
South Overburden Site Expansion Alternative versus Existing Conditions	3.1	91.8	1.7	21.3	5.5
<b>Net Emission Increase Greater Than Threshold?</b>					
Proposed Action versus Existing Conditions	No	No	NA	No	No
South Overburden Site Expansion Alternative versus Existing Conditions	No	Yes	NA	No	No

NOTE: Significant emission thresholds based on personal communication with Mr. C. Ihenacho, MDAQMD, August 21, 1995.



**TABLE 17**  
**CASTLE MOUNTAIN MINE EMISSION CONTROL EFFICIENCIES**  
**PROPOSED ACTION - 2004 OPERATIONS**

SOURCE	PERCENT EMISSIONS CONTROL EFFICIENCY				
	ROC	NOx	SO2	CO	PM10
<b>ORE REMOVAL - Fugitive PM Emissions</b>					
Drilling					90
Blasting					0
Material Loading from Pit					0
Road Dust - Pit to Crusher					95
Road Dust - Pit to O/B Disposal Area					95
Dumping to OB/LG Disposal Area					0
Overburden Disposal Area - Wind Erosion					90
<b>ORE PROCESSING - ORIGINAL EQUIPMENT</b>					
Ore Dumping to Primary Crusher					50
Primary Crusher					95
Ore Transfer to Primary Stockpile					90
Primary Stockpile - Wind Erosion					90
Secondary Crushing Unit					99
Ore Transfer - Conv #6 to Conv #13					99
Ore Transfer - Conv #7 to Surge Bin					99
Ore Transfer - Surge Bin to Conv #8A/B					99
Tertiary Crushing Unit					99
Ore Transfer - Conv #9 to Conv #13					99
Ore Transfer - Conv #13 to Splitter					95
Ore Transfer - Sampling Tower					50
Ore Transfer - Rejects to Conv #14					90
Ore Transfer - Sampling T to Conv #15					95
Ore Transfer - C#15 to Bypass S/P					0
Bypass Stockpile - Wind Erosion					0
Bypass S/P - Ore Dumping to Conv #16					50
Ore Transfer - Conv #16 to Conv #14					50
Ore Transfer - Sampling T to Conv #14					90
Lime Silo - Unloading					99
Cement Silo - Unloading					99
Calcium Silo - Unloading					99
Lime Application					50
Cement Application					50
Ore Transfer - C#14 to Agglom Belt #1					50
Ore Transfer - Agglom Belt #1 to Drum					50
Ore Transfer - Drum to Agglom Belt #2					50
Ore Transfer - A Belt #2 to Port C #2					50
Ore Transfer - 22 Port Cs to R Stackers					50
Ore Transfer - R Stacker to Leach Pad					0
<b>ORE PROCESSING - COMMINUTION CIRCUIT (ADDED 1993)</b>					
Ore Transfer - Conv #21 to Fine Ore S/P					90
Ore Transfer - Conv #22 to Mill					95
Wind Erosion - Fine Ore S/P					90
<b>MISCELLANEOUS EQUIPMENT</b>					
Propane-powered Generator	48	89	0	79	0
Propane-fired Equipment	0	0	0	0	0
Diesel Storage and Transfer Losses	0	--	--	--	--
<b>MOBILE SOURCES</b>					
Diesel - Mining Equipment	0	0	0	0	0
Diesel - Haul Trucks	0	0	0	0	0
Gasoline	0	0	--	0	--

SOURCE: Final New Source Review, Viceroy Gold Corporation: Castle Mountain Project, prepared by MDAQMD (March 15, 1991), and Authority to Construct Permit Application - Comminution Circuit: Castle Mountain Project, prepared by Viceroy Gold Corporation (April 14, 1993).

**TABLE 18**  
**CASTLE MOUNTAIN MINE - UNCONTROLLED EMISSION RATES**  
**PROPOSED ACTION - 2004 OPERATIONS**

SOURCE	POUNDS PER PEAK DAY				
	ROC	NOx	SO2	CO	PM10
<b>ORE REMOVAL - Fugitive PM Emissions</b>					
Drilling					117
Blasting					25
Material Loading from Pit					132
Road Dust - Pit to Crusher					92
Road Dust - Pit to O/B Disposal Area					428
Dumping to OB/LG Disposal Area					110
Overburden Disposal Area - Wind Erosion					95
<i>Subtotal, Mining</i>					999
<b>ORE PROCESSING - ORIGINAL EQUIPMENT</b>					
Ore Dumping to Primary Crusher					18.8
Primary Crusher					748
Ore Transfer to Primary Stockpile					19
Primary Stockpile - Wind Erosion					4
Secondary Crushing Unit					2110
Ore Transfer - Conv #6 to Conv #13					0
Ore Transfer - Conv #7 to Surge Bin					30
Ore Transfer - Surge Bin to Conv #8A/B					30
Tertiary Crushing Unit					2110
Ore Transfer - Conv #9 to Conv #13					30
Ore Transfer - Conv #13 to Splitter					32
Ore Transfer - Sampling Tower					0.2
Ore Transfer - Rejects to Conv #14					0
Ore Transfer - Sampling T to Conv #15					24
Ore Transfer - C#15 to Bypass S/P					24.1
Bypass Stockpile - Wind Erosion					1.8
Bypass S/P - Ore Dumping to Conv #16					33
Ore Transfer - Conv #16 to Conv #14					16.6
Ore Transfer - Sampling T to Conv #14					12
Lime Silo - Unloading					0
Cement Silo - Unloading					10
Calcium Silo - Unloading					0
Lime Application					0
Cement Application					0.2
Ore Transfer - C#14 to Agglom Belt #1					18.8
Ore Transfer - Agglom Belt #1 to Drum					18.8
Ore Transfer - Drum to Agglom Belt #2					3
Ore Transfer - A Belt #2 to Port C #2					3
Ore Transfer - 22 Port Cs to R Stackers					66.4
Ore Transfer - R Stacker to Leach Pad					3
<i>Subtotal, Ore Processing - Original</i>					5366.7
<b>ORE PROCESSING - COMMINUTION CIRCUIT (ADDED 1993)</b>					
Ore Transfer - Conv #21 to Fine Ore S/P					18.8
Ore Transfer - Conv #22 to Mill					2.5
Wind Erosion - Fine Ore S/P					2.6
<i>Subtotal, Ore Processing - Comminution</i>					23.9
<b>MISCELLANEOUS EQUIPMENT</b>					
Propane-powered Generator	4.6	31.8	0	28.1	0
Propane-fired Equipment	0.9	17.1	0	3.5	0.3
Diesel Storage and Transfer Losses	0.4	—	—	—	—
<i>Subtotal, Miscellaneous Equipment</i>	5.9	48.9	0	31.6	0.3
<b>MOBILE SOURCES</b>					
Diesel - Mining Equipment	50.1	1548.9	136.4	285.7	48.1
Diesel - Haul Trucks	27	796.1	14.4	184.9	22.1
Gasoline	2.4	1.3	—	2	—
<i>Subtotal, Mobile Sources</i>	79.1	2346.3	150.8	472.6	70.2
<b>TOTAL EMISSIONS</b>	85	2395.2	150.8	504.2	6460.1

Note: Uncontrolled emissions are calculated using the controlled emission rates summarized in Table 11, and the emission control factors shown in Table 17.



**TABLE 19**  
**CASTLE MOUNTAIN MINE - NET EMISSION CONTROL EFFICIENCIES**  
**PROPOSED ACTION - 2004 OPERATIONS**

SCENARIO	POUNDS PER PEAK DAY				
	ROC	NOx	SO2	CO	PM10
Uncontrolled Emissions - Proposed Action - 2004	85	2395.2	150.8	504.2	6460.1
Controlled Emissions - Proposed Action - 2004	82.8	2366.9	150.8	482	592.2
Emission Reductions	2.2	28.3	0	22.2	5867.9
Net Emission Control Efficiency	3%	1%	0%	4%	91%

Note: Controlled and uncontrolled emissions are taken from Tables 11 and 18.





**APPENDIX G**  
**KEY PERMITS**

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## APPENDIX G KEY PERMITS

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RECORD OF DECISION

Castle Mountain Project  
San Bernardino County, California

ENVIRONMENTAL IMPACT STATEMENT No. 890053

STATE CLEARINGHOUSE No. 88062708

Bureau of Land Management  
California Desert District  
Riverside, California

Approved:

Ed Hunter 10/31/90  
State Director Date



## DECISION

I approve Viceroy Gold Corporation's Proposed Plan of Operation, as modified by mitigation and monitoring provisions for the Castle Mountain Project. Based on the environmental analysis of the proposed action, I have determined that the Castle Mountain Project, as modified by mitigation and monitoring provisions, will not cause unnecessary or undue degradation to public lands. Approval of that plan of operation includes my decision to grant a right-of-way to construct, hold, transmit water, and maintain a pipeline along the alignment of Hart Mine Road and to connect individual production wells in Sections 9 and 15, T 14 N, R 17 S., S.B.M with the project site. The right-of-way grant will include access road and electrical power facilities.

My decision to approve the Castle Mountain Project has been made in consultation with San Bernardino County to ensure that the project meets applicable State of California and San Bernardino County laws and regulations, including California's Surface Mining and Reclamation Act of 1975 as amended (SMARA).

The proposed action, including mitigation and monitoring provisions, are described in the following documents which are incorporated by reference: Castle Mountain Project Draft EIS/EIR (February 1989); Castle Mountain Project Draft EIS/EIR Supplement (January 1990); Castle Mountain Project Final EIS (August 1990); Castle Mountain Project Mine Plan and Reclamation Plan (August 1990); Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring (August, 1990); and US Fish and Wildlife Service Biological Opinion (August 3, 1990).

The Castle Mountain Project will operate as an open pit heap leach mine, using established methods common to the mining industry. The project's objective is to develop a commercial open pit mine using conventional heap leach processing to recover gold in a disseminated ore body. The ore will be processed at a rate of about three million tons per year for approximately 10 years. The project site comprises about 2,735 acres, encompassing approximately 2,620 acres of Federal lands administered by BLM and 115 acres of patented mining claims administered by the County of San Bernardino. The Oro Belle Mine Pit and South Clay Pit Reclamation Area will be located on patented land. The remaining facilities will be located on public land administered by BLM.

Major components of the project include:

Mine Pits: The project will excavate two mine pits known as the Oro Belle and Lesley Ann/Jumbo. The mine pits will cover a total of about 135 acres (100 acres are on land administered by BLM; 35

acres are on patented lands) and have a maximum depth of about 600 feet. About 60 million tons of overburden and 30 million tons of ore would be removed.

Overburden Pile and Crusher: Unmineralized rock will be hauled by truck to the overburden pile. The overburden pile will cover about 300 acres at project completion. Ore will be stockpiled nearby or fed directly to the crusher, where it will be crushed to less than 3/8-inch in size.

Heap Leach Pads: Crushed ore will be transported to heap pads on the valley floor via conveyor or haul truck. "Lifts" of ore will be loaded on synthetic liners and leached with a dilute cyanide solution delivered through a drip irrigation system. The heap leach pads will cover about 330 acres at project completion.

Solution Storage and Gold Processing Plant: Process solutions from the heap leach pads will drain into pipes and flow by gravity to a solution storage area. Process solutions will be stored in welded steel tanks. Solution will be processed to recover gold using carbon absorption and electrowinning methods. The process solution will be recirculated for use at the heap leach pads.

Ancillary facilities: Facilities needed to support the operation will include elements such as an administration building, mine maintenance shop, on-site roads, and water and power supply. Water and power supply needs are described in greater detail below.

Water Requirements and Supply: Average annual water demand is estimated at about 715 acre-feet (about 450 gpm) primarily for the heap leach process and dust control. The water will be supplied from wells developed by the Viceroy. The majority of these wells are located about two miles northwesterly of the site near Hart Mine Road. Water will be delivered from each well site to the main pipeline via a buried pipe in the well access road. The main pipeline will be an 8-inch line buried in the shoulder of Hart Mine Road extended from the West Well Field to the site. Water will be stored in two tanks, with capacities of 120,000 gallons and 40,000 gallons, respectively.

Power Requirements and Supply: Power requirements are estimated at up to 3,000 kilowatts, used principally to operate facilities such as the primary crusher, fine crushing and conveying units, process plant, solution circulation pumps, and ground water well pumps. Power will be provided on-site by propane-fired electrical generators.



Access: Access to the site will be along the Mitigated Access Route Configuration as described on page 3-3 and Figure 3.3 of the Final EIS. The alignment of this route resulted from the environmental review process. The alignment of the access specifically avoids Category 1 desert tortoise habitat. This route begins at the intersection of State Route 164 (Nevada) and the YKL Ranch Pipeline Road, approximately 7.5 miles west of Searchlight, Nevada. The route proceeds 7.7 miles south on the Pipeline Road where it connects to a system of unimproved dirt trails leading to the mine site. About 4.1 miles of existing dirt roads and trails will be upgraded and connected with 4.5 miles of new construction to provide access to the state highway system.

Reclamation: Reclamation will be an active part of ongoing operations as described in the Castle Mountain Project Mine Plan and Reclamation Plan (August, 1990). A soil survey has been completed and areas for soil storage identified. A program of on-site revegetation research will be implemented to determine the most suitable methods to be used. Visual color contrasts of newly exposed rock will be reduced by applying rock staining solutions on the upper mine pit walls. Backfilling of the Jumbo and Lesley Ann pits is neither proposed nor required. Funding for reclamation activities will be guaranteed by bonding.

Proposed bonding for initial project activities is estimated to be \$1,017,900, of which \$619,000 would be posted as a joint BLM/County bond and \$398,900 would be posted with the Colorado River Basin Regional Water Quality Control Board (RWQCB), to be released only with the concurrence of BLM and the County. Within 30 days following the release of this decision, BLM, the County, and Viceroy will begin developing an agreement to design and implement the administrative bonding procedures.

#### ALTERNATIVES INCLUDING THE PROPOSED ACTION

Seven alternatives, including the proposed action, were analyzed. These are:

1. Proposed Action: The proposed project would operate for about 10 years and process ore at a rate of about three million tons per year. About 890 acres of on-site surface disturbance would occur over the project's life. Access would be provided via the Mitigated Access Route Configuration. BLM has determined that the proposed action, including mitigation and monitoring provisions, is the environmentally preferable mining alternative.
2. Reduced Project: Total tons of ore and overburden would be decreased by 50 percent. Total surface disturbance would be

about 560 acres. The rate of mining and processing would be the same as for the Proposed Action, resulting in a 5-year project life.

3. Enlarged Project: Total tons of ore and overburden would be increased by 50 percent. Total surface disturbance would be about 1,070 acres. The rate of mining and processing would be the same as for the Proposed Action, resulting in a 15-year project life.
4. Slower Processing: Total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be decreased by 50 percent, thereby increasing the life of the project to about 20 years.
5. Faster Processing: Total ore and overburden tons would be the same as estimated for the Proposed Action, but the ore processing rate would be increased by 50 percent, thereby decreasing the life of the project to about seven years.
6. Alternative Ivanpah Access Route: This alternative would have the same basic elements as the Proposed Action. However, instead of constructing the Mitigated Access Route, this alternative would require use of existing public roads through high density Category 1 desert tortoise habitat for site access.
7. No Action: The project would not be developed. Existing management and use of the site would continue subject to the California Desert Conservation Area Plan and its guidelines. The land would remain open and available to mining under the 1872 Mining Law.

#### ALTERNATIVE MITIGATION CONSIDERED

Three alternative mitigation measures as part of reclamation and backfilling were examined:

1. Maximum Pit Backfilling: This alternative would involve filling the project mine pits to approximately the original topography through the central area of each pit, but not the much steeper terrain on the flanks of the pits, following completion of the proposed mining operation. It would extend the life of the project about three years. The primary changes would be elimination of the overburden pile and reconstruction of most surface topography in the mine pits.
2. Sequential Pit Backfilling: This alternative would require accelerated mining of the Lesley Ann Pit during the last 12



months of scheduled production from that pit so that overburden material removed from the Oro Belle Pit could be placed directly in the Lesley Ann Pit without intermediate rehandling. Backfilling would therefore occur concurrently with the proposed mining operation. The primary change would be a nominal reduction in the size of the overburden pile, while filling the Lesley Ann Pit to about 30 percent of its maximum backfill capacity.

3. Scree Slope Backfilling: Following completion of the proposed mining operation, overburden would be hauled to the rim of the pits and dumped to create scree slopes of loose rock. This activity would extend the life of the project about 1.5 years. The primary change would be a nominal reduction in the size of the overburden pile and creation of a scree slope to conceal benches on the east wall of the Lesley Ann pit and the walls of the Oro Belle Pit from westerly views in Lanfair Valley.

#### MANAGEMENT CONSIDERATIONS

My decision to approve the proposed Castle Mountain Project is based on my determination that this project will not result in undue or unnecessary degradation. After close examination of the findings of the analysis and the results of public review, and after consultation with other agencies and local government including San Bernardino County Planning Department, I have concluded that the proposed action would satisfactorily resolve the major public land issues. In addition, mitigation measures have been adopted to ensure that all reasonable means to avoid or reduce environmental harm have been incorporated into the project. The project is consistent with BLM's California Desert Plan and East Mojave National Scenic Area Plan as well as with the San Bernardino County General Plan. A summary of management considerations which includes economic, environmental, and administrative factors considered is presented below:

Measures to Protect Desert Tortoise: The need to protect desert tortoise during construction and operation of the project was a major concern to BLM, U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game, Nevada Department of Wildlife, and the public. This concern was further heightened during the environmental review process when the tortoise was listed (April 2, 1990) by the USFWS as threatened in California, Nevada, and portions of other western states.

Viceroy committed to specific changes in the proposal during the preparation of the EIS/EIR to prevent harm to tortoise or its habitat: project facilities will be located away from areas of high tortoise density; any tortoises found on the site prior to

construction will be safely relocated to suitable habitat; the site will be fenced to prevent other tortoises from entering after construction begins; potential raven predation will be controlled; access to the site will be redirected from the existing Ivanpah route to a new, higher elevation location to avoid high density tortoise habitat; vans and buses will be used to reduce traffic volumes through tortoise habitat.

Based on the USFWS determination that the proposed project would not result in jeopardy to the desert tortoise, this issue has been settled. In the Biological Opinion, USFWS identified reasonable and prudent measures to protect the tortoise, including compensation for habitat lost on the project site, and established terms and conditions that will be required of Viceroy.

Provisions for Use and Storage of Cyanide: While cyanide was a concern at the draft EIS/EIR stage, modifications to the proposed action in the Supplement and FEIS/EIR coupled with the required mitigation measures substantially removes any risk to wildlife.

In the draft EIS/EIR, fencing and netting were proposed to exclude wildlife. Based on public and agency concerns about the effectiveness of those measures, Viceroy adopted an alternate design using steel storage tanks. Other measures have also been incorporated into the project proposal to eliminate accidental wildlife mortality, including drip irrigation and enclosed pipes to transport and apply the cyanide solution to leach piles and avoid ponding or exposure to wildlife.

BLM has added specific mitigation measures to protect wildlife and to provide a contingency plan in the event of flooding or overflow of the cyanide storage system. Monthly reporting of wildlife mortality will be required.

Reclamation and Backfilling: BLM evaluated reclamation and backfilling measures in response to concerns about the project's impacts on visual quality, soils, wildlife habitat, vegetation, and other values. The potential for adverse visual impacts was given special consideration since the project is located within the East Mojave National Scenic Area.

Viceroy will reclaim most of the lands disturbed by the mining operation (771 acres reclaimed of 890 acres disturbed), including portions of the Lesley Ann and Oro Belle Pits. There will be no significant residual impacts after reclamation is completed. As additional mitigation, Viceroy has agreed voluntarily to reclaim lands that had been previously disturbed by other companies: Viceroy will reclaim 36 acres on patented lands (South Clay Pit) and 55 acres on private lands immediately adjacent to the project site (North Clay Pit). Altogether, Viceroy will reclaim 862 acres of BLM and private lands.



Specific reclamation measures are described in Viceroy's Castle Mountain Project Mine Plan and Reclamation Plan (August 1990), incorporated by reference in this Record of Decision. Implementation of those measures, including stabilization and revegetation of disturbed areas, control of cuts and fills, salvage of certain native species on the site, establishment of a nursery area for revegetation purposes, staining of rock walls and development of a research and monitoring program, will be ensured by the posting of a \$619,000 reclamation bond. Success of reclamation will be measured by specific diversity and density goals established in this Record of Decision. In addition, a Revegetation Review Committee is being contemplated by Viceroy to advise BLM and the County of possible actions to increase the success of the revegetation efforts and any adjustments to the revegetation standards that may be warranted.

Particular attention was given to the issue of backfilling the 135 acres within the Lesley Ann and Oro Belle Pits. Backfilling was rejected after examining possible backfilling measures. According to a study prepared for BLM by the U.S. Bureau of Mines, "backfilling essentially doubles the costs of loading and hauling material, potentially making an otherwise profitable mine operation uneconomic to develop and operate." Backfilling would also foreclose opportunities for future mining of pit walls.

Maximum backfilling would require hauling approximately 51 million tons of material to fill the 135 acres within pit areas. Thirty nine million tons could not be accommodated, due to the swelling characteristics of mined rock, and would remain where it had been placed during mining. Maximum backfilling would not eliminate visual impacts since the remaining material would be left in place. Additional visual and other impacts would result if the material were to be moved to another location. Maximum backfilling would not provide any substantial improvement in wildlife habitat or benefit for other possible secondary uses of the site.

Sequential backfilling would not significantly change the environmental effects of the proposed action. Other backfilling measures would lengthen project life, increase fuel consumption, and result in greater impacts on water use, wildlife habitat, air quality, and visual resources.

A comparison of the area disturbed and reclaimed on the Castle Mountain Project site follows:

<u>Area Component</u>	<u>Acres Previously Disturbed</u>	<u>Acres to be Disturbed</u>	<u>Acres to be Reclaimed</u>
Lesley Ann Pit		100	10
Oro Belle Pit		35	6
So. Clay Pit	36*	-	36
No. Clay Pit	55*	-	55
So. Overbdrn Pile		300	300
Heap Leach Pads		330	330
Solution Storage		10	10
Crusher Area		10	10
Plant		4	4
Admin bldg		1	1
Roads		30	30
Soil Storage		70	70
TOTAL	91	890	862

\* Previously disturbed by different companies.

Impacts to Ground Water: The principal issue concerning groundwater is the potential effect of aquifer drawdown on Piute Spring. This issue has been resolved. Viceroy has modified the project resulting in an approximately 35% reduction in annual water requirements at the site. Studies show that drawdown is highly unlikely but as an added measure of protection, Viceroy will be required to undertake a multiyear monitoring program and contingency water supply for Piute Springs.

Mitigation measures to prevent cyanide leakage into ground water are incorporated into the project and are backed by a \$398,000 bond with the Colorado River Basin RWQCB to be released only with concurrence of BLM and San Bernardino County.

Social and Economic Factors: Public concerns centered on the potential drain on local service such as road maintenance, trash removal, fire and police protection, utilities, and housing. The EIS/EIR demonstrates that no significant adverse impacts will occur on these services since most of the 200 workers are expected to commute from Las Vegas and Viceroy will provide for utilities, trash removal, and other services on site. Further, estimated revenues of \$400,000 per year in property taxes and \$600,000 per year in sales tax and user fees, would be an economic benefit to the County.

Unavoidable and Cumulative Impacts: Some impacts cannot be avoided but none of those impacts warrant disapproval of the project or selection of another alternative. A total of 890



acres of soil and vegetation would be disturbed, less than 0.4% of the vegetation in Lanfair Valley. No sensitive or significant species would be affected and 862 of those acres would be reclaimed. There would be no significant impacts to wildlife, including desert tortoise, other threatened or endangered or sensitive species. Cultural resources would not be adversely affected. Visual impacts of the project would be largely unnoticeable from public highways and would not be inconsistent with the character of the traditional mining use of the area. There would be no significant impact on the East Mojave National Scenic Area. Since other activities within the general area are physically isolated from each other by distance or topography, the potential for cumulative impacts is not considered significant.

#### PUBLIC INVOLVEMENT

As part of the environmental analysis and identification of issues and concerns, a Notice of Intent was published in Federal Register and two public scoping meetings were conducted. Five hundred copies of the Draft EIS (DEIS) were distributed. During the 60 day review period, three public hearings were held on the DEIS. Five hundred copies of the Supplemental DEIS were distributed for sixty day public review. The Final EIS was distributed to the public, agencies, and organizations who had expressed an interest in the project. The availability of documents and meetings were published in local and regional media. As part of the public involvement process four meetings with the Sierra Club Legal Defense Fund (representing the Sierra Club, The Wilderness Society, Natural Resources Defense Council, Desert Protection Council, California Wilderness Coalition, Citizens for Mojave National Park, and Desert Survivors) were held.

#### MITIGATION AND MONITORING

The mitigation measures are described in the FEIS (page 3-10ff), the Reasonable and Prudent Measures and Terms and Conditions of the U.S. Fish and Wildlife Service Biological Opinion (Appendix G, FEIS). The Castle Mountain Project Mine Plan and Reclamation Plan, and the Castle Mountain Project Plan for Ground Water Monitoring and Contingency Water Supply to Piute Spring (page 6ff). Stipulations 1-93 in Attachment 1 of this Record of Decision are required of the operator. In addition, the aforementioned documents contain other more detailed and specific requirements in which the operator must comply.

#### APPEALS

If a party is adversely affected by this action, there is a right of appeal to the State Director in accordance with the

regulations in 43 CFR, Part 3809.4. If an appeal is taken, the notice of appeal must be filed in this office. The appeal must contain:

1. The name and mailing address of the appellant.
2. Where applicable, the name of the mining claim(s) and serial number(s) assigned to the mining claims recorded pursuant to 43 CFR Subpart 3833 which are subject to the appeal.
3. A statement of the reasons for the appeal and any arguments the appellant wishes to present which would justify reversal or modification of the decision.



# LAND MANAGEMENT DEPARTMENT

North Arrowhead Avenue • San Bernardino, CA 92415-0180 • (714) 387-4091



COUNTY OF SAN BERNARDINO  
ENVIRONMENTAL  
PUBLIC WORKS AGENCY

JOHN N. JAQUESS  
Land Management Director

OFFICE OF PLANNING  
Sharon W. Hightower  
County Planning Officer

OFFICE OF SURVEYOR  
Claude D. Tomlinson, L.S.  
County Surveyor

OFFICE OF BUILDING AND SAFETY  
Larry L. Schoelkopf, P.E.  
County Building Official

November 14, 1990

Expiration Date: December 31, 2010

Chris Mitchell, Executive Vice President  
Viceroy Gold Corporation  
P O Box 93658  
Las Vegas, NV 89193-3658

RE: SAMR/88-003/DN585-1145N (90M-013); Mining Conditional Use Permit to establish an open pit gold mine operation on 115 acres of patented mining claims and a Reclamation Plan on the entire 2,735 acre project site.

Dear Mr. Mitchell:

This is to advise you that your Mining/Reclamation Conditional Use Permit was conditionally approved by the Planning Commission on September 27, 1990, subject to your compliance with the requirements as set forth in the Conditions of Approval on the attached pages 1 of 24 through 24 of 24.

Attached you will also find a Mitigation Monitoring and Compliance Program which sets forth the implementation and verification procedures necessary to meet the Environmental Mitigation Measures placed on your project as identified in the Conditions of Approval.


In accordance with the San Bernardino County Development Code, Section 83.010350(a), unless all conditions have been complied with and the occupancy, use or division of land authorized by the land use decision has taken place or been recorded within thirty-six (36) months after the day the land use decision becomes effective, the land use decision shall become null and void.

One extension of time, not to exceed thirty-six (36) months, may be granted upon written application stating reasons for extension and the payment of the required fee to the County Office of Planning, not less than thirty (30) days prior to the date of expiration. PLEASE NOTE: This will be the only notice given for the above specified expiration date. The applicant is responsible for initiating extension requests.

Letter to Chris Mitchell  
November 14, 1990  
Page 2

Should there be any questions concerning the above matters, you may call this office at (714) 387-4099.

PLANNING DEPARTMENT



For RANDY SCOTT, SENIOR PLANNER  
ENVIRONMENTAL TEAM

Enclosure: 2

cc: Surveyor  
Building and Safety  
Env. Health Services  
Fire Warden  
Air Pollution Control District  
Bureau of Land Management - Riverside/Barstow  
Sierra Club Legal Defense Fund

RS:AR:vy



## CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

COLORADO RIVER BASIN • REGION 7

73-271 HIGHWAY 111, SUITE 21

PALM DESERT, CALIFORNIA 92260

Phone: (619) 346-7491



JAN 17 1991

Viceroy Gold Corporation  
P.O. Box 93658  
9457 Las Vegas Blvd. South, Suite D  
Las Vegas, NV 89123

RE: Waste Discharge Requirements for Viceroy Gold Corporation, Castle Mountain Project

Enclosed is a copy of Order No. 91-002. This Order was adopted by the Regional Board at its meeting in Indian Wells on January 16, 1991.

Should you have any questions concerning this Order, please feel free to contact this office.

A handwritten signature in cursive script that reads "Gary L. Morris".

GARY L. MORRIS  
Assistant Executive Officer

WPS:pg

Enc: As noted above

File: Viceroy Gold Corporation, Castle Mountain Project, Board Order No. 91-002

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

ORDER NO. 91-002

WASTE DISCHARGE REQUIREMENTS  
FOR  
VICEROY GOLD CORPORATION  
CASTLE MOUNTAIN PROJECT  
Hart, San Bernardino County

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. Viceroy Gold Corporation, 9457 Las Vegas Blvd. South, Suite D, Las Vegas, NV 89123 (hereinafter referred to as the discharger) submitted an application for Waste Discharge Requirements on March 27, 1990 to the Regional Board.
2. The above referenced application was deemed complete on December 5, 1990 by the Regional Board staff upon receipt of all of the appropriate documentation from San Bernardino County and the Bureau of Land Management. An Environmental Impact Report (State Clearinghouse Number 88062708) was prepared for this project pursuant to the provisions of the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA). The San Bernardino Planning Commission certified this Environmental Impact Report as complete and adopted a Notice of Determination on September 27, 1990. The Bureau of Land Management issued a Record of Decision and certified Environmental Impact Statement Number 890053 on October 31, 1990 for the Castle Mountain Project. All technical and ground water quality data in the Environmental Impact Report and other technical reports are made a part of this order for the purpose of further compliance.
3. Several water quality problems that were addressed during the EIR/EIS review process were commented on by Regional Board staff in compliance with CEQA Section 15096. Adequate mitigation measures were made in the permitting process to protect the waters of the State. Some of the mitigation measures are discussed in other Findings of these Waste Discharge Requirements.
4. Any impact on the ground water underlying the heap leach site will be detected by the extensive ground water monitoring network that will be installed according to the Discharge Specifications of these Waste Discharge Requirements.



5. The discharger proposes to operate a gold recovery heap leach facility using a weak cyanide solution that will be capable of processing up to 11,000 tons per day of mineral bearing ore over a 10-year period on a total site area of 2,735 acres on the following areas of land:

T14N, R17E, SBB&M

Section 13: S $\frac{1}{2}$  of SE $\frac{1}{4}$  and W $\frac{1}{2}$  of SW $\frac{1}{4}$  of SW $\frac{1}{4}$

Section 23: All, except N $\frac{1}{2}$  of N $\frac{1}{2}$

Section 24: All, except E $\frac{1}{2}$  of NW $\frac{1}{4}$  of NW $\frac{1}{4}$ , and NW $\frac{1}{4}$  of NE $\frac{1}{4}$  of NW $\frac{1}{4}$

Section 25: All

Section 26: All

T14N, R18E, SBB&M

Section 19: SW $\frac{1}{4}$  of SW $\frac{1}{4}$

Section 30: W $\frac{1}{2}$  of W $\frac{1}{2}$

Approximately 890 acres of land area will be disturbed on the property described above for the purposes of mineral recovery.

6. Upon completion of the heap leach process, each pile or segment would be flushed with fresh water or otherwise rinse-treated after completion of leaching operations to reduce cyanide concentrations to an acceptable level which would result in a mining waste classification of Group C, under Article 7, Chapter 15, Title 23 of the California Code of Regulations. The pile would then be either abandoned in place or removed elsewhere.
7. The Water Quality Control Plan for the Colorado River Basin Region of California designates the beneficial uses of ground and surface waters in this Region.
8. The beneficial uses of ground waters in the Piute Hydrologic Unit are:
- a. Municipal supply (MUN)
  - b. Industrial supply (IND)
  - c. Agricultural supply (AGR)
9. There are no domestic wells within 500 feet of the Castle Mountain Project discharge facilities described in Finding No. 5, (above).
10. The Board has notified the discharger and all known interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge.
11. The Board in a public meeting heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, that the discharger shall comply with the following:

A. Discharge Specifications

1. The treatment or disposal of wastes at this facility shall not cause pollution or nuisance as defined in Sections 13050(1) and 13050(m) of Division 7 of the California Water Code.

2. Adequate measures shall be taken to assure that flood or surface drainage waters do not erode or otherwise render portions of the Castle Mountain Project discharge facilities inoperable.
3. The Castle Mountain Project shall be protected from any washout or erosion of wastes or covering material, and from any inundation which could occur as a result of floods having a predicted frequency of once in 100 years.
4. The discharge of any wastes to any surface waters or surface drainage courses is prohibited.
5. The discharger shall comply with "Monitoring and Reporting Program No. 91-002", and future revisions thereto, as specified by the Regional Board's Executive Officer.
6. Prior to any modifications in this facility which would result in material change in the quality or quantity of wastewater treated or discharged, or any material change in the location of discharge, the discharger shall report all pertinent information in writing to the Regional Board.
7. Prior to any change in ownership or management of this operation, the discharger shall transmit a copy of this Board Order to the succeeding owner/operator, and forward a copy of the transmittal letter to the Regional Board.
8. The discharger shall ensure that all site operating personnel are familiar with the content of this Board Order.
9. This Board Order does not authorize violation of any federal, state, or local laws or regulations.
10. The cyanide solutions shall be contained only in the processing system or in other leak-proof containers.
11. There shall be no wind transport of cyanide solution or ore containing cyanide away from the leaching area.
12. The heap leach ore piles shall be underlain by a synthetic liner which has a maximum permeability of  $1 \times 10^{-10}$  cm/sec and a minimum thickness of 40 mils. An equivalent liner may be approved by the Regional Board's Executive Officer if the discharger demonstrates that the equivalent liner will function as well or better than the above-specified minimum system. Any pad designed and constructed prior to the effective date of this Board Order may utilize 36-mil reinforced liners at the edges of the pads.
13. Each cyanide solution containment basin, each cyanide-bearing sludge containment basin, and each trunk cyanide solution transport ditch, shall be underlain by a double liner with a leachate collection and removal system installed between the two synthetic liners. Each synthetic liner shall have a permeability which does not exceed  $1 \times 10^{-10}$  cm/sec. The liners shall have a minimum thickness of 40 mils. Each basin shall contain a double-lined leak detection and withdrawal sump. Each trunk transport ditch shall contain double-lined leak detection and withdrawal sumps at approximately 1,000-foot intervals. The double liners with leachate collection and removal systems shall extend up the sidewalls to at



least 2.0 feet (vertically) above the maximum working depth of the cyanide solution and/or sludge contained therein.

The remaining sidewalls of both basins and trunk transport ditches shall have at least a single 40-mil weather-resistant synthetic liner, or an equivalent liner approved by the Regional Board's Executive Officer.

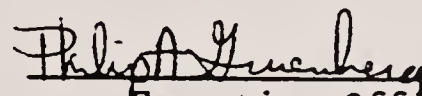
14. All drainage and collection facilities used to contain or transport leaching solution shall be effectively sealed to prevent leakage of these liquids.
15. The processing area shall be protected from any run-on, washout, or erosion which could occur as a result of a storm having a predicted frequency of once in 100 years.
16. There shall be no discharge of process wastewater at any location without prior approval from the Executive Officer.
17. Adequate measures shall be taken to insure that liners remain intact throughout the duration of the leaching activity and lifetime storage.
18. Leached ore residual shall not be placed in perennial, intermittent, or ephemeral stream channels unless provisions are made to divert runoff around the waste in a non-erosive manner. Waste shall not be placed where it can be eroded by stream flows or cause accelerated stream bank erosion.
19. Prior to removal of leached ore residue from a lined pad for disposal, the cyanide contained therein shall be neutralized as described in Specification No. 23, below.
20. Ore residue may be abandoned on a pad, provided the cyanide in the ore is neutralized as described in Specification No. 23, below, and all other necessary and applicable closure requirements are complied with.
21. All industrial waste materials not covered by said Article 7, Chapter 15 shall be discharged at a Board-approved waste management facility. Any hazardous waste containers shall be rendered unusable prior to final disposal.
22. The heap leach processing area shall be diked, and containment basins shall be provided to impound all storm water drainage from the piles and from the cyanide solution collection and transport facilities during a maximum probable one-hour storm, as set forth in Department of Water Resources Bulletin No. 195 for Needles. In addition, containment capacity shall be provided for 24 hours of cyanide solution drain down from the piles. Also, standby emergency facilities shall be available to assure continual circulation of the leaching solution if at any time it is determined that a planned processing configuration or rate could in an emergency result in flow in excess of existing basin storage capacity. The additional storm storage capacity shall be provided before the new processing configuration is started.

23. When abandoning leached ore residue, the procedure for determination of whether free cyanide ( $\text{CN}^-$ ) in the ore residue has been neutralized to a satisfactory level shall be as follows:
- a. A sampling grid for the ore pile or segment on the leach pad shall be submitted for approval by the Executive Officer. The sampling grid shall contain a total of at least ten sampling locations on the ore pile or segment being abandoned.
  - b. The sample to be analyzed from each sampling location shall contain 100 grams as an aliquot of samples taken as set forth below, except that no sample shall be taken within three feet above the plastic liner unless special provisions are made to avoid penetrating the liner or for sealing said penetrations:
    1. An ore pile thirty feet or less in depth shall have samples taken at 25, 50, and 75 percent of the depth.
    2. An ore pile greater than thirty feet in depth shall have samples taken every ten feet of depth.
  - c. The procedure for preparing samples for the analysis of free cyanide and extractable metals in the detoxified tailings shall be consistent with Monitoring and Reporting Program No. 91-002, and Attachments A and B to said Monitoring and Reporting Program. The monitoring reports shall be certified to be true and correct, and signed, under penalty of perjury, by an authorized officer of the company.
  - d. The maximum allowable free cyanide ( $\text{CN}^-$ ) shall not exceed the following levels in the filtrate portion of a 5:1 extraction.
    1. 90 percent of at least 10 samples shall contain less than 1 mg/l free cyanide ( $\text{CN}^-$ ) in the filtrate.
    2. None of the samples shall contain more than 2 mg/l free cyanide ( $\text{CN}^-$ ) in the filtrate.
  - e. For any sampling location that indicates a free cyanide level in excess of 2 mg/l in the filtrate, the areal extent of the inadequately detoxified area shall be determined and detoxified so that the cyanide levels in that particular ore pile will comply with the limitations contained in Specification No. 23, above.
24. Adjacent and contiguous ore piles or segments shall also be sampled simultaneously when any pile or segment is to be abandoned. If any additional processing is done in the sampled areas, the piles and segments tested will require additional neutralization and testing prior to abandonment.
25. Prior to the start of the operations, the discharger shall install a ground water monitoring well network and a vadose zone monitoring system as approved by the Executive Officer.



26. At least 60 days<sup>1</sup> prior to commencement of construction of each component of the facility, the discharger shall submit a technical report to the Board for approval by the Executive Officer, which shall include a plan showing in detail the proposed construction of that component.
27. At least 10 days prior to commencement of operations, the discharger shall submit a certificate to the Board, signed by a California Registered Civil Engineer or Certified Engineering Geologist, stating that the pads, containment basins, leakage detection system, flood protection and attendant facilities, and disposal areas are constructed in accordance with the technical report as approved by the Executive Officer to meet the requirements of this Board Order.
28. At least 20 days prior to loading ore onto the pads, the discharger shall notify the Board to allow sufficient time to schedule a staff evaluation of construction and inspection procedures utilized by the discharger for liner installation.
29. The discharger shall submit to the Board, at least 30 days prior to commencement of the herein stated expanded operations, written adequate assurance as determined by the Executive Officer that money is committed in an amount sufficient to insure neutralization of all cyanide, plus cleanup and closure of the processing and tailings disposal site upon abandonment of facilities, in a manner that will not adversely affect water quality.
30. Lack of construction or operational activity on the site for a period of one year shall constitute abandonment for the purpose of this Board Order.
31. The discharger shall maintain devices installed in the ore piles which permit measurement of solution depth (the hydraulic head) over the liner beneath that ore pile.
32. A closure plan shall be submitted to the Regional Board and approved by the Executive Officer before the start of the leaching activities.

I, Philip A. Gruenberg, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on January 16, 1991.

  
Executive Officer

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<sup>1</sup> 60 days unless a lesser period is approved by the Executive Officer in writing.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 91-002

FOR

VICEROY GOLD CORPORATION  
CASTLE MOUNTAIN PROJECT  
Hart, San Bernardino County

Location of Discharge: Portions of T14N, R17E, SBB&M and T14N, R18E, SBB&M

The discharger shall submit to the Regional Board monthly reports containing the following:

MONITORING AND REPORTING PROGRAM NO. 1

- A. The current status of mining operations as to whether the operation is active or inactive.
- B. An estimate of the total amount of ore (tons) presently being processed.
- C. The amount of liquid collected in each seepage collection sump and corresponding liner permeability in centimeters per second.
- D. Analysis for free cyanide and total cyanide in ground water from each ground water monitoring well, and of any water found in each seepage collection sump.
- E. Analysis for free cyanide and total cyanide for any liquid found in the vadose zone monitoring system.

MONITORING AND REPORTING PROGRAM NO. 2

- A. Immediate reporting of any accidental spillage, leakage, or release of waste material, including immediate measures being taken to correct same.
- B. Upon request from this Regional Board's Executive Officer, the discharger shall furnish special technical and/or monitoring reports on the treatment and discharge of wastes, and on the integrity of the cyanide solution containment system.
- C. At least 30 days prior to any proposed abandonment of leached ore residues or discharge of wastewater, or termination of the operation described in this Board Order, the discharger shall submit a copy of the results of analyses of the cyanide concentration in the leached ore residue and in the wastewater in accordance with Discharge Specification No. 23, and shall request a Regional Board staff inspection to approve the proposed discharge or cleanup procedure.



- D. Report of completion of cleanup of premises shall be submitted to the Regional Board in writing within one week following completion of work.

The above monitoring program shall be implemented and/or maintained immediately upon adoption of Board Order No. 91-002.

REPORTING

Monthly Monitoring reports shall be submitted to the Regional Board by the 15th day of the following month.

Submit monitoring reports to:

California Regional Water Quality Control Board  
Colorado River Basin Region  
73-271 Highway 111, Suite 21  
Palm Desert, CA 92260

ORDERED BY: Philip A. Gruenberg  
Executive Officer

January 16, 1991  
Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

ATTACHMENT A

ANALYTICAL PROCEDURE

FOR

IONIC CYANIDE

Also known as free soluble cyanide

Description: Ionic cyanide and most weak complexes are soluble in distilled water. The strong complexes of ions, although normally soluble, are bound too tightly to the particle surface and are not solubilized. The sample is leached with distilled water in a single pass, flow-through manner. The leachate is collected, alkalized for preservation, and made up to a definite volume. This leachate sample is then analyzed via "Standard Methods" 412 C or E. Method 412 D may not be used.

Apparatus:

- 1) Large glass funnel, the stem throat plugged with glass wool;
- 2) Large glass funnel with glass fiber filter paper: Whatman GF/C, 934-AH, or equivalent.
- 3) Balance capable of weighing to nearest 0.01 g.
- 4) 500 ml volumetric flasks.
- 5) Items necessary to perform cyanide analysis as described in narrative above.

Reagents:

- 1) 2.5 N NaOH (100 g NaOH/l)
- 2) Reagents necessary to perform cyanide analysis as described in narrative above.

Procedure:

Weigh out, to nearest 0.01 g, 100±1 g of samples as received. Place in glass funnel, either glass wool plugged or with filter paper. Add 50.00 ml of 2.5 N NaOH to 500 ml volumetric flask and place it so as to catch the filtrate from the funnel. Pour 50 ml of distilled (or deionized) water onto the solid sample and allow to percolate through. When liquid level is even with the top of the solids, add an additional 50 ml of water. Repeat the addition of water until a total of 400 ml H<sub>2</sub>O has been used. Make up volume in volumetric flask to mark with distilled water. This constitutes the sample ready for analysis.

The titrametric (412C) and the ion selective probe (412E) require no further preparation. The sample is then read directly by either titrametric (412C) or the ion selective probe (412E) and the results indicating the amount of ionic cyanide reported in mg/l.

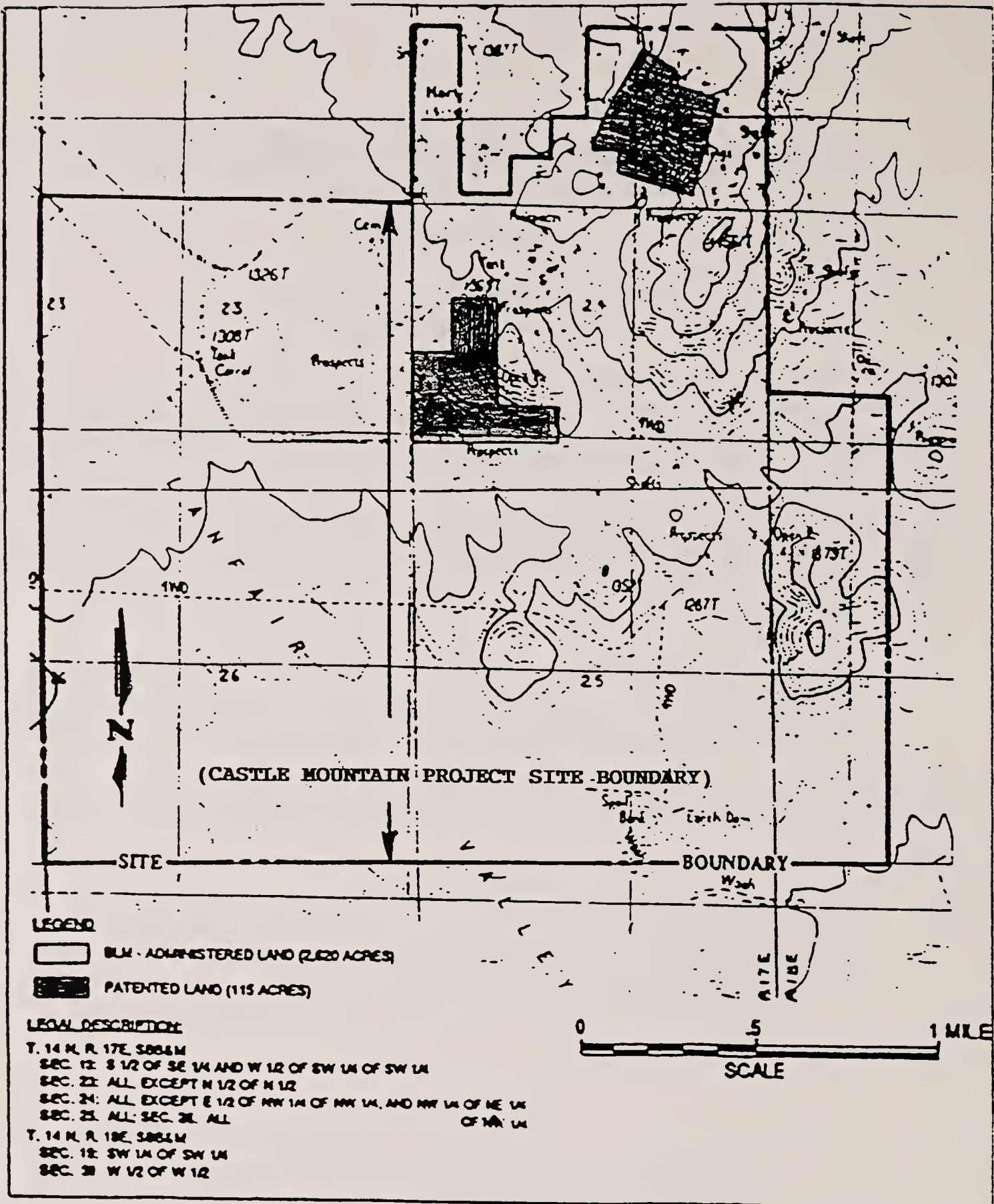


CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

ATTACHMENT B

PROCEDURE FOR THE DETERMINATION  
OF EXTRACTABLE METALS

- A. Samples from each location, as approved by the Regional Board's Executive Officer, shall be composited and tested for the net acid/base potential utilizing the procedure in "Field and Laboratory Methods Applicable to Overburden and Minesoil", (PB-280-495), March 1978; pp. 47-50 & 69-72.
1. If the net acid/base potential indicates a presence of net acid forming potential, the composites shall be subjected to the waste extraction test described in Section 66700, Article 11, Chapter 30, Division 4, Title 22 of the California Code of Regulations.
  2. If the net acid/base potential indicates an absence of net acid forming potential, the composites shall be subjected to a waste extraction test similar to that in A.1., above, but utilizing distilled water buffered to the pH of rainwater, as the extractant.
- B. The resultant test extracts shall be analyzed as follows:
1. All of the extracts shall be analyzed for copper and iron.
  2. Ten percent of the extracts shall be analyzed for the metals listed under Section 66699, Article 11, Chapter 30, Division 4, Title 22 of the California Code of Regulations.







ENVIRONMENTAL HEALTH SERVICES DEPARTMENT  
COUNTY OF SAN BERNARDINO, CALIFORNIA

THIS PERMIT EXPIRES:  
06/30/1997

CASTLE MOUNTAIN MINE  
P O BOX 68  
SEARCHLIGHT, NV 89046-3658  
EST - 90021245 PERMIT - 9005290031

**PERMIT**  
NON-TRANSFERABLE

This permit may be suspended or revoked by Environmental Health Services for cause. This permit is granted on condition that the person named in the permit will comply with the laws, ordinances and regulations that are now or may hereafter be in force by the United States Government, the State of California and the County of San Bernardino pertaining to the above mentioned business. Penalty fees are assessed on permits renewed 30 days after expiration date indicated above, or for failure to obtain new permit in case of transfer of ownership.

TYPE OF PERMIT - DOMESTIC WATER SYSTEM-NON-COMMUNITY (INDUSTRIAL)

FEE PAID \$410.00

DBA: CASTLE MOUNTAIN MINE  
P O BOX 68  
SEARCHLIGHT, NV 89046-3658

NBR CONNS -

6

04-1804-631 REV. 4/92

PERMIT DOES NOT IMPLY APPROVAL

POST IN A  
CONSPICUOUS PLACE

*Pamella V. Bennett*  
Director  
ENVIRONMENTAL HEALTH SERVICES

G-27

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

Issuing Office

Needles Resource Area

Serial Number

CA - 28869

1. A right-of-way or permit is hereby granted pursuant to:

- a. ☒ Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);
- b. ☐ Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);
- c. ☐ Other (describe) \_\_\_\_\_

2. Nature of Interest:

- a. By this instrument, the holder Viceroy Gold Corporation receives a right to construct, operate, maintain, and terminate a Right-of-way for utilities and access on public lands (or Federal land for MLA Rights-of-Way) described as follows:

T.14N, R.17E; SBBM

Sec 1, NW $\frac{1}{4}$ NE $\frac{1}{4}$ , E $\frac{1}{2}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$   
Sec 2, SE $\frac{1}{4}$ SE $\frac{1}{4}$   
Sec 11, N $\frac{1}{2}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$   
Sec 14, N $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$   
Sec 23, E $\frac{1}{2}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$

T.15N, R.17E; SBBM

Sec 24, S $\frac{1}{2}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$   
Sec 25, E $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$   
Sec 36, NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , NE $\frac{1}{4}$ SW $\frac{1}{4}$ , SE $\frac{1}{4}$ SW $\frac{1}{4}$ , SW $\frac{1}{4}$ SE $\frac{1}{4}$

b. The right-of-way or permit area granted herein is 60 feet wide, 6.8 miles ~~or~~ long and contains 49.5 acres, more or less. If a site type facility, the facility contains \_\_\_\_\_ acres.

c. This instrument shall terminate on October 17, 2006 15 years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

d. This instrument ☒ may ☐ may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.



3. Rental adjusted annually, shall be \$84.00 for remainder of 1991 and \$530.00 for 1992.

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions.

- a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.
- b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 120 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.
- c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.
- d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A & B dated October 17, 1991 attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.
- e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.
- f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

[Signature]  
(Signature of Holder)

Area Vice President  
(Title)

October 18, 1991  
(Date)

[Signature]  
(Signature of Authorized Officer)

Area Manager, Needles Resource Area  
(Title)

October 17, 1991  
(Effective Date of Grant)

GPO : 1985 O - 483-259

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

Issuing Office

Needles Resource Area

Serial Number

CA-27438

1. A (right-of-way) (permit) is hereby granted pursuant to:

- a. ☒ Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776, 43 U.S.C. 1761);
- b. ☐ Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);
- c. ☐ Other (describe) \_\_\_\_\_

2. Nature of Interest:

- a. By this instrument, the holder Viceroy Gold Corporation, Incorporated receives a right to construct, operate, maintain, and terminate a 6 wells, a water pipeline, electrical trans- mission line and service road. on public lands (or Federal land for MLA Rights-of-Way) described as follows:

T. 14N., R. 17E., SBBM  
Sec. 9, SE $\frac{1}{4}$ ,  
Sec. 10, SW $\frac{1}{4}$ SW $\frac{1}{4}$ ,  
Sec. 15, SW $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ , SE $\frac{1}{4}$   
Sec. 22, NE $\frac{1}{4}$ NE $\frac{1}{4}$   
Sec. 23, Within  
Sec. 24, Within

Further described as:

Sixty feet wide, 7389 feet long, containing 10.2 acres encompassing the Hart Mine Road; 7879 feet long, twenty feet wide, containing 3.6 acres; totaling 15,268 feet long, 13.8 acres.

Well sites are located at:

T. 14N., R. 17E. SBM  
Sec. 9, E $\frac{1}{2}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ ,  
E $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ ,  
  
Sec. 15, W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ ,  
W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ ,  
W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ ,  
N $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ .

see above

- b. The right-of-way or permit area granted herein is      feet wide,      feet long and contains 13.8 acres, more or less. If a site type facility, the facility contains 2.2 acres.

- c. This instrument shall terminate on November 28, 2005, 15 years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

- d. This instrument ☒ may ☐ may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

- e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.



3. Rental. Rental for 15 years is calculated at \$2,486.00 subject to reappraisals and recalculations every 5 years.

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions.

- a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.
- b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 120 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.
- c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.
- d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A and B, dated November 28, 1990, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.
- e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.
- f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.
- g. Disturbance is to be limited to 10 feet of the center line. No disturbance outside of said 10 feet is to occur without specific authorization from the Bureau of Land Management (Notice to Proceed). Said notice shall issue only after appropriate inventories of the proposed disturbed area have been conducted.
- h. All construction, operation, maintenance and reclamation to the area utilized for the pipeline, transmission line and service roads shall be in accordance with the approved mine plan and reclamation plan (1.8.6 and 1.8.7).

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

[Signature]  
(Signature of Holder)

[Signature]  
(Signature of Authorized Officer)

[Signature]  
(Title)

Area Manager, Needles  
(Title)

November 28, 1990  
(Date)

November 29, 1990  
(Effective Date of Grant)



SAN BERNARDINO COUNTY FIRE DEPARTMENT  
COUNTY OF SAN BERNARDINO, CALIFORNIA



THIS PERMIT EXPIRES:  
05/31/1997

CASTLE MTN PROJECT  
115575 HART MINE RD  
IVANPAH, CA 92309

EST - 91024356 PERMIT - 9104260017

# PERMIT

NON-TRANSFERABLE

This permit may be suspended or revoked by the County Fire Department for cause. This permit is granted on condition that the person named in the permit will comply with the laws, ordinances and regulations that are now or may hereafter be in force by the United States Government, the State of California, the County of San Bernardino, and/or applicable cities pertaining to the above mentioned business. Penalty fees are assessed on permits renewed 30 days after expiration date indicated above, or for failure to obtain new permit in case of transfer of ownership.

TYPE OF PERMIT - HAZARDOUS MATERIAL HANDLER

FEE PAID \$208.00

VICEROY GOLD CORP  
DBA: CASTLE MTN PROJECT  
P O BOX 68  
SEARCHLIGHT, NV 89046

NBR EMPLS -

60

*Richard Lawrence*  
Director  
COUNTY FIRE CHIEF/FIRE WARDEN

04-1804-631 REV. 8/95

PERMIT DOES NOT IMPLY APPROVAL

POST IN A  
CONSPICUOUS PLACE



SAN BERNARDINO COUNTY FIRE DEPARTMENT  
COUNTY OF SAN BERNARDINO, CALIFORNIA



THIS PERMIT EXPIRES:  
05/31/1997

CASTLE MTN PROJECT  
115575 HART MINE RD  
IVANPAH, CA 92309

EST - 91024356 PERMIT - 9104260016

# PERMIT

NON-TRANSFERABLE

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TYPE OF PERMIT - HAZARDOUS WASTE GENERATOR

FEE PAID \$926.00

VICEROY GOLD CORP  
DBA: CASTLE MTN PROJECT  
P O BOX 68  
SEARCHLIGHT, NV 89046

NBR EMPLS -

60

*Richard Lawrence*  
Director  
COUNTY FIRE CHIEF/FIRE WARDEN

04-1804-631 REV. 8/95

PERMIT DOES NOT IMPLY APPROVAL

POST IN A  
CONSPICUOUS PLACE

G-32





# United States Department of the Interior

## FISH AND WILDLIFE SERVICE FISH AND WILDLIFE ENHANCEMENT SOUTHERN CALIFORNIA FIELD STATION

Ventura Office  
2140 Eastman Avenue, Suite 100  
Ventura, California 93003

August 3, 1990

### Memorandum

To: State Director, Bureau of Land Management, Sacramento, California

From: Office Supervisor *Peter A. Stone*

Subject: Biological Opinion for the Castle Mountain Project, San Bernardino County, California (6840 CA-932.1) (1-6-90-F-24)

This Biological Opinion responds to your request for formal consultation with the Fish and Wildlife Service (Service) pursuant to Section 7 of the Endangered Species Act of 1973, as amended (Act). Your request was dated January 17, 1990 and received by us on January 22, 1990. At issue are the impacts of permitting the operation of a proposed gold mining project on public lands in the Castle Mountains of eastern San Bernardino County, California and western Clark County, Nevada may have on the desert tortoise (Gopherus agassizii), a federally listed threatened species.

This Biological Opinion was prepared using information: contained in your January 17, 1990 request for consultation to the Service's Regional Director regarding the proposed action; obtained during informal consultation between our staffs; in a September 1, 1989 memorandum from the District Manager of the Las Vegas District to the Field Supervisor of the Service's Reno Field Station; from a letter, dated March 27, 1990, from Environmental Solutions, Inc., the biological consultants for the proposed project, to the Service; obtained from several meetings among the concerned parties; and contained in our files. Additional time was taken in preparing this final Biological Opinion to resolve questions regarding the degree of impacts and means to minimize incidental take.

### Biological Opinion

It is the opinion of the Service that the proposed action is not likely to jeopardize the continued existence of the desert tortoise.

Project Description

The proposed project is a heap leach gold mining operation with a projected life of 10 years. The proponent is the Viceroy Gold Corporation, a Canadian corporation. The mine site and processing facilities are located in the Castle Mountains at elevations ranging from 4,190 to 4,550 feet. The operation would occupy approximately 890 acres and consist of: mine pits (135 acres); overburden piles (300); heap leach pads (330); soil storage (70), solution storage (10), and crushing areas (10); roads (30); and office space (5). Most of the project area is located within habitat occupied by the desert tortoise, except as noted below.

Approximately 135 acres of the project site consist of existing mine pits which do not support desert tortoises or their habitat.

Project plans would result in the restoration of approximately 60 acres of tortoise habitat that was disturbed by previous mining activities. Viceroy has proposed this effort as a means of establishing restoration methods and of initiating habitat restoration measures prior to the abandonment of the new pits. Because of the slow recovery of desert habitats, the Bureau and Viceroy agreed that 30 acres of credit would be given for this restoration.

Access to the mine would be along a 20-foot wide road which would exit the site to the northeast and then turn generally north to intersect with State Route 164 in Nevada. This route is currently in existence for most of its length as a jeep trail. The length of this access road is approximately 18.8 miles and the amount of disturbance associated with new construction would be 35.6 acres. Viceroy anticipates that project traffic will be 108 automobile/truck trips daily (page 6-7 of the Biological Assessment).

A wellfield, located to the northwest of the mine, will supply water to the mine site. This wellfield was partially constructed prior to the tortoise's listing, although three additional wells, with a temporary total area of disturbance of approximately 0.7 acre, are proposed to be installed. Additionally, an access road of approximately 1.7 miles and eight feet in width, to connect well sites 7 and 11 to the main access road, is proposed. The area of disturbance associated with this road is 1.6 acres.

Total disturbance associated with the project is approximately 938 acres. The portions of the project area that have been previously disturbed (135 acres), are otherwise very unlikely to support tortoises (10), or are being viewed as remedial actions to restore tortoise habitat (48) amount to 193 acres. Therefore, the net acreage of tortoise habitat to be disturbed by the proposed project is 745.



## Description of Mitigation Options that are Part of the Proposed Action

Viceroy has proposed, as part of its project description, several measures designed to mitigate or compensate for loss of tortoises and habitat. These are the 1) the retirement and reclamation of Clark County Road A68P which traverses Category 1 tortoise habitat in Piute Valley, 2) the restoration of 60 acres of existing clay pits which are located on-site, and the acquisition of the Crescent Peak Grazing Allotment and the immediate elimination of cattle grazing from 50,000 acres of Pastures 4 and 5 of this allotment, which are located in the Piute Valley of Nevada.

In the Bureau of Land Management's (Bureau) Biological Assessment, the compensation formula developed by the Bureau was used to ascertain the compensation required of Viceroy for loss of tortoise habitat. Based on a net impact of 745 acres, the Bureau determined that a compensation ratio of 2.5:1, resulting in a total habitat compensation of 1,862 acres ( $2.5 \times 745$ ), would be required. The Bureau then converted this acreage figure to a monetary value, based on local land values of \$150 per acre. This figure totalled \$279,300. These estimated funds were to be distributed between a projected devaluation of the Crescent Peak Allotment, because of the immediate implementation of reduced grazing based on Technical Review Team recommendations, and tortoise studies and equipment for use by the Bureau. The Service does not believe this mitigation approach is appropriate in this case for the following reasons:

1. Implementation of the Technical Review Team recommendations immediately would provide only temporary benefits to the tortoise. It is our understanding that a Bureau Plan amendment which would implement these recommendations has already been planned for the Crescent Peak Allotment, and that this amendment would be implemented within a period of approximately two to three years. Thus, the additional benefits to the tortoise of the immediate implementation of these recommendations would only accrue for this time, while the impacts of the mine would last much longer. Additionally, the Service believes that impacts to the desert habitat of the tortoise and the tortoise itself must be considered on a longer time scale than many other species. For example, if the current drought continued through the short period over which the Technical Review Team recommendations were in place as a compensation measure for the Viceroy project, the tortoise would actually accrue little if any benefit from this measure, as forage would be unavailable for either cattle or tortoises.

2. The Service believes that the use of project compensation funds for studies and field equipment would not result in significant benefit to the species. The long-term or permanent loss of habitat cannot be adequately addressed by research and equipment alone. Our belief is that studies used as part of a mitigation measure must be associated with measures to further protect or manage habitat and should be limited to those actions which are required to monitor the effectiveness of other mitigation or compensation efforts.

Effects of the Proposed Project on the Listed Species

## Species Account

On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened. Information referenced in this Opinion on the range, biology, and ecology of the desert tortoise is found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), and Weinstein et al. (1987).

The proposed mine site is located in the Bureau's designated Category 3 habitat, composed of a creosote bush scrub/Joshua tree woodland association, Joshua tree woodland, and blackbush scrub at lower, intermediate, and higher elevations, respectively. Plant community types are from Munz (1974). Based on transects conducted in 1989 in the project area by Peter Woodman, Viceroy's biological consultant, approximately 25 tortoises were estimated to occupy the project area. Most of the burrows observed were located at the lower elevations and associated with washes. One tortoise scat was found within a portion of the site that is proposed for development, while a single live tortoise was located at the southernmost tip of the project site in an area which will not be disturbed. Two existing mine pits are located within this project area. They comprise a total of 135 acres and are located at elevations greater than 4,400 feet. Given the previous disturbance and the elevation, these areas are not considered to be tortoise habitat.

On March 4, 1990, Bureau staff from the Stateline Resource Area used a fiberoptic scope to inspect the burrows within and near the project site that had been identified during earlier field efforts. No tortoises were located in burrows using this method.

The wellfield site is also located within a creosote bush scrub/Joshua tree woodland community within the Lanfair Valley, which is an area of low tortoise densities. The three sites which have yet to be drilled are located along an existing road. The 1.7-mile road extension to provide access to wells 7 and 11 is proposed to be an eight-foot wide ungraded route for small trucks.

The proposed access road to State Route 164 lies generally above an elevation of 4,000 feet. Field work conducted in this vicinity on August 27, 1989 by Stateline Resource Area staff found total adjusted sign counts of from zero to three per transect indicating that tortoises may occur at this site in very low densities. Except for the northernmost approximately 3.5 miles of this route, which is located within Category 1 habitat, the access route is within a Category 3 area.

## Analysis of Impacts

The proposed project would result in the taking of any tortoises that may be found within any area which is to be developed as part of the mine site. Given the high



elevation of the project site, the low density of tortoises on-site, and overall scarcity of tortoises in Lanfair Valley, the impacts to the tortoise from loss of the habitat in this area are not viewed as significant. Based on the information provided to the Service, losses of individual tortoises should be minimal and should be eliminated through careful pre-development mitigation measures.

Wellfield construction was largely completed prior to listing. Any tortoise burrows and tortoises in the vicinity of the three proposed well sites, which are located along an existing road, should be able to be avoided during construction. The 0.7 acre of impact includes temporary impacts associated with construction; the permanent loss of habitat will be restricted to three 25- by 25-foot pads, or a total of 0.4 acre, where the wells will be located. The additional proposed access road and water pipeline would disturb approximately 1.7 acres. Because of the nature of this road, avoidance of tortoise burrows would be feasible and the pipeline could be elevated or buried to avoid blocking the movement of tortoises. However, impacts to tortoises from this activity are not expected because of the area's high elevation and the fact that most of the construction on this portion of the project was completed prior to the listing of the tortoise.

Approximately eight acres (3.2 linear miles) of the access road (totally 35.6 acres of disturbance) to State Route 164 pass through areas that are not considered tortoise habitat. This would result in a net disturbance of 27.6 acres of tortoise habitat through new road construction or upgrading of the existing trail. Direct impacts to tortoises burrows should be avoidable, given the sparse distribution of tortoises in this area, as shown by the Bureau's August, 1989 survey. Potential exists for tortoises to be taken through increased use of this road, both by mine employees and the general public after its upgrading. However, the location of the road at the upper edge of tortoise habitat, the low number of tortoises expected to use this area, and Viceroy's commitment to close and restore Clark County Road A68P should greatly reduce the potential for take of individual tortoises in the Piute Valley as a whole.

The Service does not believe the impacts described above are sufficient to jeopardize the continued existence of the species. We reach this conclusion based on the following facts:

1. Stipulations imposed on the proponent by the Bureau should greatly reduce the potential for take of individual tortoises.
2. The tortoise habitat that will be lost as a result of this action does not support large numbers of tortoises and is unlikely to do so in the foreseeable future, due, at least in part, to the high elevations at the project site and access road.
3. The compensation measures proposed by Viceroy would provide long-term benefits to the tortoise and would likely promote the recovery of the population in that area.

These measures would be either elimination of cattle grazing on 50,000 acres of the Crescent Peak Allotment within the Piute Valley of Nevada or acquisition, subsequent transferral to the Bureau, and management for tortoise habitat values as a primary objective of 745 acres of private lands within desert tortoise habitat in eastern California or the Piute Valley of western Nevada. Establishment and maintenance of a significant unit of land with the objective of providing for a self-sustaining biological system would be a meaningful step towards tortoise recovery in the eastern Mojave Desert.

### Cumulative Effects

Cumulative effects are those impacts of future State and private actions that are reasonably certain to occur in the project area. Future Federal actions will be subject to the consultation requirements established in Section 7 of the Act and, therefore, are not considered cumulative to the proposed project.

Most of the actions that are reasonably expected to occur within the vicinity of the action will be subject to Section 7 consultations, because the Federal government owns large portions of the desert. Actions aimed at conserving tortoises and their habitat in the Piute Valley may result as part of the Clark County conservation planning efforts. However, the Service cannot, at this time, pre-judge the outcome of a Section 10(a) permit application, should one be submitted.

### Incidental Take

Section 9 of the Endangered Species Act prohibits the take of listed species without special exemption. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, killing, capturing, collecting, or attempting to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Under the terms of Section 7(b)(4) and 7(o)(2) of the Act, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take statement. The measures described below are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit, as appropriate.

Based on the analysis of impacts provided above and those Terms and Conditions stated below, the Service anticipates that the following take could occur as a result of activities associated with the construction and operation of Castle Mountain Mine and its access road:

1. One (1) tortoise in the form of direct mortality through accidental death during the construction of the mine facilities.



2. Two (2) tortoises in the form of harassment through the excavation of active burrows in the construction area.
3. Seven (7) tortoises in the form of direct mortality through the crushing of tortoises along both the access and water line roads for the life of the project. This accounts for additional anticipated mortality resulting from use of the road by non-project related vehicles.
4. Seven hundred, ninety-three (793) acres of tortoise habitat as a result of construction activities. This acreage reflects the amount of known desert tortoise habitat disturbed by project activities. It does not include acreage that has been credited to Viceroy for restoration efforts (i.e., Clark County Road A68P and the clay pit).

The Service is assuming that the stipulations contained in this Biological Opinion, as Reasonable and Prudent Measures and Terms and Conditions to reduce take, will reduce the potential for take associated with the action. Collecting tortoises for pets or any other form of harassment is strictly prohibited. Any person found engaging in any such activities will be liable for prosecution.

#### Reasonable and Prudent Measures

The Service believes that the following Reasonable and Prudent Measures are necessary and appropriate to minimize the incidental taking authorized by this Biological Opinion:

1. Project activities shall be limited to designated rights-of-ways and work areas to reduce adverse impacts to desert tortoise habitat and individual tortoises.
2. Construction activities and mining operations shall be conducted in a manner that will reduce adverse impacts to desert tortoise habitat and individual tortoises.
3. To minimize take to the overall tortoise population found in this vicinity, Viceroy shall compensate for the long-term loss and fragmentation of tortoise habitat through improvement of habitat conditions of tortoise habitat. Additional measures shall include either:
  - a. Permanent elimination of cattle grazing on 50,000 acres of the Crescent Peak Allotment (Pastures 4 and 5) through the immediate removal of cattle on those lands by Viceroy and the subsequent retirement of grazing rights on Pastures 4 and 5 through the Bureau Plan amendment process;

OR

- b. Acquisition of 745 acres of private lands in the eastern Mojave region (i.e., extreme eastern California or southwestern Nevada) containing valuable tortoise habitat which would be subsequently managed for the benefit of desert tortoises.

Terms and Conditions

To comply with the Reasonable and Prudent Measures contained in this Opinion, the Bureau must ensure that Viceroy complies with the Terms and Conditions presented in this Opinion. These Terms and Conditions are as follows:

- 1a. Construction areas shall be clearly staked, flagged, or fenced prior to the onset of construction. All construction workers shall be instructed that their activities must be confined to locations within these areas.
- 1b. All construction vehicles shall stay within the designated work areas. Overnight parking and storage of equipment and materials, including stockpiling and borrow sites, shall be in previously disturbed areas (i.e. lacking vegetation), whenever possible. If previously disturbed areas are not available, these activities shall be restricted to within the work areas and shall be inspected for tortoises and their burrows by the designated biologist(s) prior to use.
- 1c. All drivers employed or contracted by Viceroy and all employees shall be required to use the access route from State Route 164 to the mine site. Viceroy shall supply buses or vans for pooling use by mine employees. Speed limits of 35 miles per hour shall be strictly enforced by Viceroy officials, through cooperation with the contact representative or environmental specialist.
- 2a. The project proponent (Viceroy Gold Corporation) shall designate an individual as a contact representative who will be responsible for overseeing compliance with protective stipulations for the desert tortoise and coordination with the Bureau. This person shall have the authority to stop any activities which are not in compliance with the Terms and Conditions of this Opinion.
- 2b. All workers shall be informed of the occurrence of the desert tortoise in the area and the status of this species. They shall be advised as to the potential impact to tortoises and the potential penalties (up to \$50,000 in fines and one year in prison) for taking a threatened species. The contents of the worker and inspector education program shall be submitted to the Service for review prior to the presentation of this program. The employee procedure card on page 6-10 of the Biological Assessment instructs workers to move tortoises that may not be in immediate danger. This would be considered take in the form of harassment as only persons specifically authorized by the Service may legally handle tortoises. This is not permitted by this Opinion.



2c. The construction area shall be inspected for desert tortoises and their burrows prior to the onset of construction in any given area. The inspection shall be conducted by a designated biologist (approved by the Service) and shall provide 100 percent coverage of the area within the construction zone either:

1. within one (1) day prior to construction activity;

OR

2. at any time prior to the onset of construction but after the perimeter of the mine site has been enclosed and maintained in a tortoise-proof fence.

2d. Burrows shall be excavated and tortoises handled only by biologists authorized by the Service. Viceroy shall submit its list of designated biologists to the Service for our review prior to the onset of any ground disturbing activities.

2e. All tortoises which are found on the mine site or in the access road right-of-way, whether above ground or in excavated burrows, shall be placed 150 feet outside of the impact area in undisturbed habitat. Tortoises shall be placed in the shade of a large shrub. Tortoises found above ground within three (3) hours of nightfall or when ambient air temperatures exceed 90°F shall be placed in a clean cardboard box and held overnight in a cool location. The box shall be covered and kept in possession of a designated biologist for release the next morning in the manner described above. Should construction occur during the tortoise's winter inactive period, Viceroy should contact the Service for further instructions.

2f. Disposable plastic gloves shall be used to handle all tortoises. All materials which come into contact with tortoises shall be used only once and then properly discarded.

2g. The water line road, water pipeline routes, and future well sites shall be inspected for tortoises and their burrows prior to the onset of construction. These facilities shall be located in a manner that would eliminate the potential of harming the tortoise or burrow. The designated biologist(s) shall flag or otherwise mark the burrow in an appropriate manner to eliminate the potential for take. Trenches shall be checked for tortoises by a project foreman (previously approved for this activity by the Service) prior to backfilling. We have agreed to allow a non-biologist to perform this task because of the low likelihood of encountering tortoises along the water line route or in the wellfield.

2h. The Bureau shall ensure that Viceroy has installed tortoise-proof fencing around the perimeter of its work area prior to the commencement of mining operations. The fence design and general location shall be as depicted in Figure 6.3 of the Biological Assessment and amended via a letter from Viceroy to the Service, dated June 29, 1990 (Attachment 1). Any alterations in fence location shall be submitted to the Service

prior to use. The tortoise-proofing materials may consist of the polyethylene cyclone fencing which was submitted to the Service for inspection via a letter from Viceroy, dated July 20, 1990. We are not specifying a mesh size at this time because of lizard mortality that has resulted from fencing installed along Route 58. The Bureau shall informally consult with the Service and the California Department of Fish and Game prior to the approval of any mesh size. The designated biologist or environmental specialist shall conduct periodic inspections of the fence to ensure its integrity and to inspect it for trapped wildlife. Particular attention should be given to wash areas after rainstorms.

2i. During construction activities, vegetation shall be crushed in the vicinity of the future water wells, except where blading is necessary for placement of the well equipment.

2j. Trash and food items shall be removed on at least a daily basis and placed in raven-proof containers at all times. This Condition applies to the period of mine operation, as well as construction.

2k. Firearms shall be prohibited on the construction site, except for those borne by authorized security personnel, California Department of Fish and Game wardens, and Bureau rangers.

2l. No later than 90 days after the commissioning of the primary crusher, the contact representative or environmental specialist shall submit a post-construction biological report to the Service. This report shall document the effectiveness of the tortoise mitigation measures, the level of take associated with the project, and an indication of the progress of the grazing elimination/tortoise habitat acquisition program.

2m. The Bureau shall ensure that Viceroy reclaims the mine site, as described in its reclamation plan. Reclamation shall include the removal from the site and proper disposal (if appropriate) of all objects and conditions, including hazardous wastes, which could be harmful to wildlife.

2n. The contact representative or environmental specialist shall submit a yearly report to the Service which details the effectiveness of on-going mitigation measures and monitoring efforts, such as enforcement of speed limits, van-pool compliance, a running total of tortoises that are incidentally taken, and the development, implementation, and success of restoration plans. Submission of this report shall be sequenced with the monitoring requirements of the County of San Bernardino specified by AB 3160. Should non-compliance with any Term or Condition contained herein occur before the regular submission of this report, the Bureau and the Service shall be notified as soon as possible.



3a. To compensate for the loss of 793 acres of tortoise habitat, the Bureau shall ensure that Viceroy:

1. Completes the decommission and scarification, where appropriate, of Clark County Road A68P within two years of the authorization of this project;
2. Prepares a reclamation plan which details the procedures which will be used to revegetate disturbed areas, including the 60 acres of the south clay pit, to natural conditions at the completion of the project. This plan shall be submitted to the Service concurrent with distribution to the general public, prior to the approval of the project by the County of San Bernardino; and
3. Eliminates all grazing on the 50,000 acres which comprise Pastures 4 and 5 of the Crescent Peak Allotment within 45 days of the receipt of the authorization of this project by the County of San Bernardino and the Bureau. At the time that grazing is eliminated, the Bureau shall pursue an Amendment to retire Pastures 4 and 5 from grazing in perpetuity. These lands shall then be managed in perpetuity as a self-sustaining biological system for the benefit of desert tortoises;

OR

4. Acquires 745 acres of desert tortoise habitat within the Category 1 habitat of the eastern Mojave (i.e., extreme eastern California or southwestern Nevada) area and convey it to the Bureau of Land Management to be managed, in perpetuity, for the benefit of desert tortoises. The size of this acquisition was determined by the Service and is based on an evaluation of the proposed project's size, potential impacts, and the tortoise resources of the project area.

The Service believes Conditions 3a3 or 3a4 are appropriate measures to minimize take because of the increased tortoise management capabilities that could be achieved through elimination of grazing in the Piute Valley or Bureau ownership of previously private lands. The Service believes the Condition 3.A.3 would provide the greatest benefits to the tortoise because it would relieve any competition for forage or deterioration of habitat value that may be occurring as a result of cattle grazing over a very large area of desert tortoise habitat.

If the Bureau chooses to require that compensation be made in the form of land acquisition, the project proponent should review lands being considered for acquisition with the Service, Bureau, California Department of Fish and Game, and the Nevada Department of Wildlife to verify their suitability prior to acquisition. Criteria to be evaluated include the location of the land, its current status and condition, and its proximity to other tortoise habitat that is currently being managed for tortoise values

or may have particular value to the long-term conservation of the tortoise in this region. Viceroy shall also coordinate its land acquisition activities through the Bureau's Desert District Realty program to ensure efficient transfer of title to public ownership. Finally, proof of acquisition shall be submitted to the Service and Bureau within six months of the commissioning of the primary crusher.

The Service is to be notified within three working days of the finding of any listed species which was killed or injured as a result of this action. Notification must include the date, time, and location of the carcass, and any other pertinent information. Dead animals may be marked in an appropriate manner and left on-site. Injured animals should be transported to a qualified veterinarian. Should any treated tortoises survive, the Service should be contacted prior to decisions on the final disposition of the animals. The Service contact person is Ray Bransfield in this office.

If take which occurs as a result of this action meets that specified and authorized in the Incidental Take Statement above, the Bureau shall require that mine operations cease immediately and shall reinitiate formal consultation with the Service to review those activities which resulted in excessive take.

#### Conservation Recommendations

In furtherance of the purposes of the Endangered Species Act (Sections 2(c) and 7(a)(1)) that mandate Federal agencies to utilize their authorities to carry out programs for the conservation of listed species, we recommend implementing the following action:

1. The Bureau should cooperate with the Service, the California Department of Fish and Game and the Nevada Department of Wildlife in the development of a standard procedure for monitoring compliance for projects of this nature. This evaluation should include a process that will enable agencies to track compliance with all project-associated mitigation and compensation measures.
2. The Bureau should initiate a GIS study of desert tortoise habitat in eastern California and western Nevada to evaluate the cumulative impacts of human activities on the tortoise. This study should include analyses of previous, on-going, and anticipated future activities.
3. The Bureau should develop a monitoring program to assess the success of restoration measures such as those proposed for the reclamation of the clay pits and the scarification of Clark County Road A68P.

This concludes formal consultation on the Castle Mountain Project. If the action is modified in a manner not discussed above, if new information becomes available on listed species or impacts to listed species, or if the incidental take limit is met, the Bureau should reinitiate formal consultation with the Service. Any questions or



State Director (1-6-90-F-24)

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comments should be directed to Ray Bransfield of my staff at FTS 983-6040 or (805) 644-1766.

Attachment 1. Tortoise-proof fence location

Literature Cited

- Burge, B.L. 1978. Physical characteristics and patterns of utilization of cover sites by Gopherus agassizii in southern Nevada. Proc. 1978 Symp., The Desert Tortoise Council. pp. 80-111.
- Burge, B.L., and W.G. Bradley. 1976. Population density, structure and feeding habits of the desert tortoise, Gopherus agassizii, in a low desert study area in southern Nevada. Proc. 1976 Symp., The Desert Tortoise Council. pp. 51-74.
- Hovik, D.C., and D.B. Hardenbrook. 1989. Summer and fall activity and movements of desert tortoises in Pahrump Valley, Nevada. Abstract of paper presented at Fourteenth Annual Meeting and Symposium of the Desert Tortoise Council.
- Luckenbach, R.A. 1982. Ecology and management of the desert tortoise (Gopherus agassizii) in California. In: R.B. Bury (ed.). North American Tortoises: Conservation and Ecology. U.S. Fish and Wildlife Service, Wildlife Research Report 12, Washington D.C.
- Munz, P.A. 1974. A flora of southern California. University of California Press, Berkeley, CA.
- Weinstein, M., K.H. Berry, and F.B. Turner. 1987. An analysis of habitat relationships of the desert tortoise in California. A report to Southern California Edison Co.





VICEROY

ATTACHMENT 1

VICEROY  
GOLD  
CORPORATION

9457 Las Vegas Blvd. So., Suite D  
Las Vegas, Nevada 89123  
Telephone (702) 361-4776  
Fax (702) 361-2378

June 29, 1990

Mr. Ray Bransfield  
US Department of the Interior  
Fish & Wildlife Service  
Southern California Field Station  
Ventura Office  
2140 Eastman, Suite 100  
Ventura, CA 93003

Dear Ray,

Re: Castle Mountain Project - Tortoise Fencing

Further to our telephone conversation Friday afternoon, attached please find a copy of Figure 6.3 from the Biological Assessment for the Castle Mountain Project. As you know, we had originally intended to construct a tortoise-proof fence similar to that shown in the lower left-hand corner of Figure 6.3 around the southwest side of the initial heap leach pad and then across the dry wash to tie into the rocky hillside at the southeast corner of the overburden pile. In addition to the tortoise-proof fence around the perimeter, we had proposed to construct a chain link fence immediately adjacent to the heap leach pad which would enclose the pad and the process plant area.

In view of the cost of fencing we would like to change the design somewhat. The proposed revisions would be as follows: segments a-b and d-e would be constructed according to the fencing detail shown on Figure 6.3. In other words, no change from the Biological Assessment. Segments b-c and c-d would be six-foot high chain link fence with hardware cloth at the bottom of the fence extending approximately 20" up the chain link and buried 16" below the bottom of the chain link fencing. Thus a tortoise-proof fence would extend as originally proposed from point A all the way around to point E, but a portion of it would now be attached to chain link fencing rather than barbed wire. The chain link fencing would extend along the northeast side of the heap leach pad between points d-b so that the pad and process plant would then be totally enclosed by chain link fencing.

It would be appreciated if you would review this fencing concept and advise me of your reaction as soon as convenient, either by fax or by telephone.

Thank you for your attention to this matter.

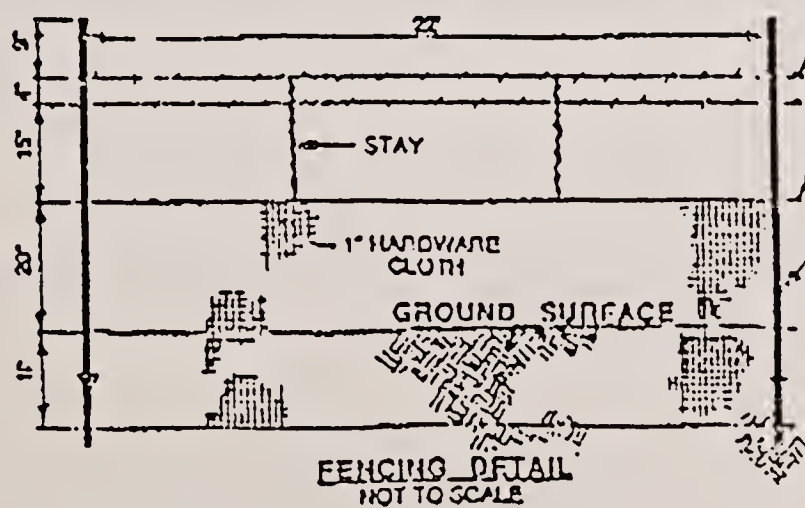
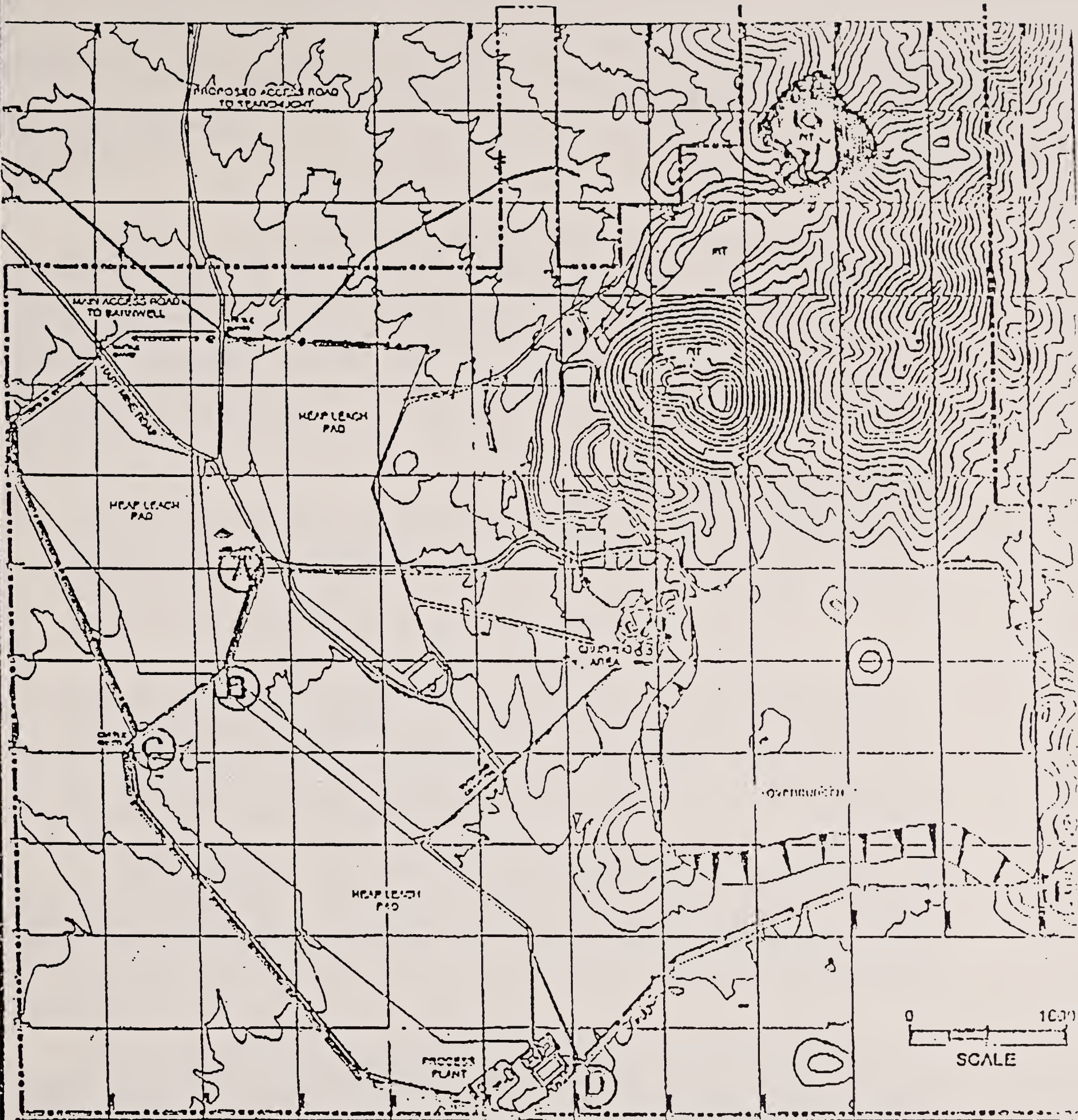
Yours very truly,

A handwritten signature in cursive script that reads "Chris".

J.C. Mitchell,  
Senior Vice-President

06-29-06  
JCM/SB





BARBED WIRE

CABLELESS WIRE

FENCE POST

# LEGEND

- PHASE 1 FENCING
- PHASE 2 FENCING
- PROJECT BOUNDARY

FIGURE 6.3

## DESERT TORTOISE FENCING PLAN

CASTLE MOUNTAIN PROJECT  
ENVIRONMENTAL SOLUTIONS, I

NOTE: TORTOISE FENCING WOULD BE CONSTRUCTED IN CONJUNCTION WITH CATTLE FENCING AS SHOWN IN THE FENCING DETAIL. TORTOISE FENCING WOULD BE CONSTRUCTED AROUND LOWER ELEVATION PORTIONS OF SITE WHERE TORTOISES OCCUR

## DEPARTMENT OF FISH AND GAME

1416 NINTH STREET

P.O. BOX 944209

SACRAMENTO, CA 94244-2090



(916) 653-4875

July 8, 1993

Mr. Mike Attaway, General Manager  
Viceroy Gold Corporation  
Post Office Box 68  
Searchlight, Nevada 890426

Dear Mr. Attaway:

Castle Mountain Mine Endangered Species  
Management Permit (Reference Number 9237)

The Viceroy Gold Corporation has applied to the Department of Fish and Game (DFG) for California Endangered Species Act (CESA) Section 2081 Endangered Species Management Permit for the Castle Mountain Mine Project in the eastern Mojave Desert, San Bernardino County. The Castle Mountain Mine Project was also the subject of the attached Federal Endangered Species Act Section 7 consultation between the U.S. Fish and Wildlife Service (USFWS) and the Bureau of Land Management (BLM) that concluded in August 3, 1990 (6840 CA-932.1)(1-6-90-F-24). The resulting Biological Opinion for the project identified potential impacts to the State and federally-listed desert tortoise together with reasonable and prudent measures to prevent jeopardizing the species.

Section 2095 of CESA encourages the DFG to work cooperatively with the USFWS to develop a Federal Biological Opinion that reflects consistent and compatible findings. The DFG is further directed, whenever possible, to adopt the Federal Biological Opinion as the written findings required pursuant to Section 2090. While no similar specific guidance is provided for Section 2081, the intent of a Section 2080 Management Agreement is similar to the Federal Biological Opinion in avoiding jeopardy to the species and minimizing the effect of any incidental taking. The DFG has reviewed the Federal Biological Opinion for the projects and determined that it is consistent with CESA. It is also clear that the Legislature intended that the DFG avoid unnecessary duplication of the Federal process.



Mr. Mike Attaway  
July 8, 1993  
Page Two

Therefore, the DFG hereby adopts the attached Federal Biological Opinion for the Castle Mountain Mine as our findings. The DFG adopts the required mitigation measures contained therein under reasonable and prudent measures and terms and conditions as required for the issuance of the DFG Code Section 2081 Endangered Species Management Permit for the project. All terms and conditions shall become part of the 2081 Permit and shall be enforceable by the DFG. In addition to the specified mitigation measures, the DFG also requires the following to satisfy Section 2081:

1. DFG requires notification equivalent to that provided to the USFWS and the BLM, including timely notice of noncompliance, take, and other periodic reports. The DFG contact person shall be Mr. Curt Taucher, Environmental Services Supervisor, Department of Fish and Game, 330 Golden Shore, Suite 50, Long Beach, California 90802.
2. In the event that the Castle Mountain Mine Project approaches the established take authorization for desert tortoise, as identified in the Federal Biological Opinion, the DFG shall require the project sponsor to request a revised 2081 permit. Negotiations with DFG and the appropriate Federal agencies that may result in additional mitigation/avoidance measures.

The Viceroy Gold Corporation has identified replacement habitat necessary to compensate for desert tortoise habitat impacted by the Castle Mountain Mine. Mr. Frank Hoover, a DFG tortoise expert, has reviewed and approved the identified parcels as suitable tortoise habitat. The DFG is therefore in concurrence with the BLM in accepting these lands as habitat management lands for desert tortoise.

If the project is changed significantly in a way not discussed in the Federal Biological Opinion, or if new information concerning desert tortoise or probable impacts from the project on the desert tortoise becomes available, a new or amended Section 2081 Management Permit will be required.

Mr. Mike Attaway  
July 1, 1993  
Page Three

If you have further questions please feel free to contact Mr. Curt Taucher, Environmental Service Supervisor, Department of Fish and Game, 330 Golden Shore, Suite 50, Long Beach, California 90802, telephone (310) 590-5126; or Mr. David Showers, Endangered Species Consultation Coordinator, Department of Fish and Game, 1416 Ninth Street Sacramento, California 95814, telephone (916) 653-9779.

Sincerely,



John L. Turner, Chief  
Environmental Services Division

Attachment

cc: Mr. Fred Worthley  
Department of Fish and Game  
Long Beach, California

Mr. Ray Bransfield  
US Fish and Wildlife Services  
Ventura, California

Mr. David Showers  
Department of Fish and Game  
Sacramento, California

Mr. Patrick G. Mitchell  
Gresham, Varner, Savage, Nolan and Tilden  
San Bernardino, California



To: ☒ Office of Planning and Research  
1400 Tenth Street, Room 121  
Sacramento, CA 95814

☒ Clerk of The Board of Supervisors  
County of San Bernardino  
385 N. Arrowhead Ave., 2nd Floor  
San Bernardino CA 92415-0130

From: (Public Agency) San Bernardino County  
385 North Arrowhead Avenue  
(Address)  
San Bernardino, CA 92415



Subject:

Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

See Label

Project Title

88062708

Randy Scott

(714) 387-4155

State Clearinghouse Number  
(If submitted to Clearinghouse)

Lead Agency

Area Code/Telephone/Extension

See Label

Contact Person DATES ID : 745DSN88004413SAMR01/04413SM1  
COMMUNITY : NEEDLES  
FILE/INDX : SAMR/88-0003/DN585-1145N

Project Location (include county)

Project Description: See Label

APPLICANT : VICEROY GOLD CORPORATION  
PROPOSAL : CONDITIONAL USE PERMIT TO ESTABLISH A GOLD MINE ON 115 ACRES & RECLAMATION PLAN ON 2735 ACRES WITH ENVIRONMENTAL IMPACT REPORT ON 2735 ACRES  
LOCATION : HART MINE RD. SOUTH SIDE, APPROXIMATELY 5 MILES EAST OF LANFAIR RD.  
REP : N/A

San Bernardino County

This is to advise that the Planning Commission has approved the above described project on

☐ Lead Agency ☒ Responsible Agency

September 27, 1990 and has made the following determinations regarding the above described project:  
(Date)

1. The project ☒ will ☐ will not have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.  
☐ A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures ☒ were ☐ were not made a condition of the approval of the project.
4. A statement of Overriding Considerations ☒ was ☐ was not adopted for this project.
5. Findings ☒ were ☐ were not made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval is available to the General Public at:

Planning Department on the 3rd Floor at the above address

Randy Scott  
Signature (Public Agency)

September 27, 1990

Date

Senior Planner

Title

Date received for filing at OPR:

Revised October 1989

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-5402  
**CERTIFICATE OF RENEWAL**

**LEGAL OWNER OR OPERATOR: (356)**  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

**EQUIPMENT LOCATION: (1021)**  
CASTLE MOUNTAIN VENTURE  
115575 Hart Mine Rd.  
Ivanpah, CA 92309

This certificate officially confirms that the listed Permit(s) to Operate and/or Authority(ies) to Construct have been renewed. The new expiration date is:

MARCH 31,  
1997



B002293	B002833	B002834	B002852	B003693	B004013	C002839
C002842	C002843	E002850	N002845	T002835	T002837	T002844

A person shall not operate equipment contrary to permit conditions specified on permits issued in accordance with the provisions of Rule 203.1.

This certificate must remain with your permits at all times, and made available to District staff upon request.

By:  For \_\_\_\_\_ Date: 3/14/96

Charles L. Fryxell,  
Air Pollution Control Officer

CAC-03/96



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

B002293

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 2

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart Mine Rd near  
Mountain Pass, CA

**DESCRIPTION:**

MINING, TRANSPORTING AND PRIMARY CRUSHING SYSTEM which consists of the following equipment:

	HP
Fuller-Traylor Gyratory Crusher. Serial No.13-67-21643; 2,000 t/h	400.0
Hydraulic Hammer	40.0
Conveyor No.1, 6' x 33'	60.0
Conveyor No.2, 4' x 250'	250.0
Magnet	10.0
Coarse Ore Stockpile, including the 100 ft diameter, 4 legged, 34 ft high wind screen	
The recirculating water pump for this equipment is driven by a 25 hp motor and fed from a 25,000 gallons tank	25.0
TOTAL:	785.0

**CONDITIONS:**

1. Materials processed (blasting, open pit material loading by front end loaders, transport from open pit mine to the crusher/storage area, and ore dumping to crusher/storage area) shall contain sufficient natural and/or added moisture to ensure compliance with District Rules 401, 402, and 403.
2. The bin which receives ore from the 120 ton trucks shall not be filled unless the water sprays are functioning prior to dumping.
3. Fugitive dust control shall be a routine, day-to-day operation for dust generated by vehicular traffic on unpaved roads shall be effected from a water cannon and/or traditional water truck and/or the application of chemical stabilizers as a minimum. A water cannon truck shall be available to mitigate the open pit loading by front end loaders to trucks.
4. Pit mining operations shall be restricted to 360,000 tons per week at a rate of 120 hours per week (but no more than 20 hours per day). The owner/operator (o/o) shall employ surveying to provide monthly estimates of ore removed. These estimates shall be logged, kept current on-site for a minimum of 2 years and provided to District personnel on request. Blasting shall be restricted to daylight hours only.

Fee Schedule: 1(C): Rating: 785.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550	310/061	67SE/390SN
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY: Charles L. Fryxell FOR  
Charles L. Fryxell  
Air Pollution Control Officer

DATE: 4/21/95

j1 4-95

CONDITIONS. continued

5. The o/o shall be restricted to hauling material from the pit mine to the crusher/storage area to a rate of 90.000 ton/week (750 haul truck trips @ 120 tons each). The o/o shall log the number of truckloads, maintain the log on-site for a minimum of 2 years, and provide it to District personnel on request.
6. Annual crushing thruput shall be restricted to  $\leq 4.5 \times 10^5$  ton/year and not exceed 15.000 ton/calendar day. The o/o shall log the daily thruput and the log shall be kept current, on-site for a minimum of two years and provided to District personnel on request.

THIS PERMIT SUPERCEDES THE ONE ISSUED IN MARCH 1995



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

B002833

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 2

LEGAL OWNER OR OPERATOR: (356)

CASTLE MOUNTAIN VENTURE

P.O. Box 68

Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)

CASTLE MOUNTAIN VENTURE

9 mi E of Ivanpah/Hart mine road

near Mountain Pass, CA

**DESCRIPTION:**

SECONDARY/TERTIARY CRUSHING SYSTEMS which consist of the following equipment:

	HP
Conveyor No.3A, 5' x 16'	20.0
Conveyor No.3B, 5' x 16'	20.0
Conveyor No.4, 4' x 340'	125.0
Sump Pump-reclaim tunnel	5.0
SECONDARY CRUSHER: 7' HD Standard Nordberg-Symons cone crusher. Serial No. C-7677	350.0
Surge Bin	-----
Conveyor No.5, 6' x 25'	20.0
Conveyor No.6, 3' x 72'	20.0
Conveyor No.7, 3' x 188'	60.0
Magnet	10.0
Conveyor No.8A, 3.5' x 185'	60.0
Conveyor No.8B, 3.5' x 185'	60.0
Conveyor No.9, 3' x 45'	60.0
Conveyor No.10, 5' x 15'	20.0
Conveyor No.11, 3' x 45'	20.0
Conveyor No.13, 3' x 270'	40.0
TERTIARY CRUSHERS, two 7' XHD Shorthead Nordberg-Symons cone crushers, Serial Nos.7561 & 7562, @ 400 HP each	800.0
Conveyor No.14, 3' x 3,300'	150.0
Conveyor No. 16, 3.5' x 38'	60.0
Agglomeration System	
Conveyor, 3' x 50'	20.0
Drum, 10' diameter x 30'	50.0
Moveable Conveyor System	
Discharge Conveyor, 3' x 50'	20.0
Grasshopper Conveyor-22, @ 3' x 100' and 20 hp	440.0
Transfer Conveyor, 3' x 50'	20.0
Hopper Conveyor, 3' x 110'	40.0
Radial Stacker Conveyor, 3' x 100'	40.0

Fee Schedule: 1(D): Rating: 2636.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550	310/018	67SE/3905N
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY Charles L. Cryxell FOR  
Air Pollution Control Officer

DATE: 3/18/94  
dec/jl 3-15-94

## Secondary/Tertiary Crushing Systems continued:

	<u>HP</u>
Ore Sampling System	
Conveyor No.SC1. 1' x 16'	0.5
Conveyor No.SC2. 2' x 18'	0.5
Conveyor No.SC3. 1' x 22'	0.5
Conveyor No.SC4. 1' x 18'	0.5
Sample Crusher. Kue-Ken Model 25, 3" x 12"	4.0
Air Compressor, Industrial Machinery Co., Joy Model WN112E	<u>100.0</u>
TOTAL:	2636.0

## CONDITIONS:

1. The Secondary Crushing System shall be restricted to 13200 tons in each calendar day.
2. No crushing and/or transporting of any materials processed by the above equipment shall occur without being vented to the baghouses which are functioning under valid District permits C002842 and C002843.



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661  
**PERMIT TO OPERATE**

B002834

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

BYPASS STOCKPILE which consists of:

Conveyor No.15, 3' x 100' and includes associated shaker  
Bypass Stockpile (10,000 tons)

HP  
65.0  
---  
65.0

TOTAL:

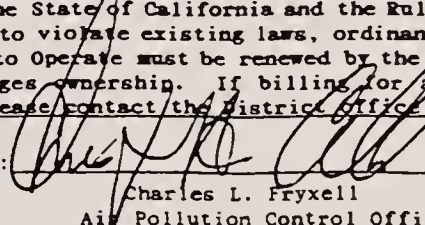
**CONDITIONS:**

1. This stockpile shall contain sufficient natural and/or added moisture to preclude violations of District rules 401, 402, and 403.
2. Additional water and/or chemical stabilizer shall be added to this by-pass stock pile during periods of inactivity and/or winds in excess of 25 mph. to ensure compliance with District Rules 401, 402, and 403.

Fee Schedule: 1(B); Rating: 65.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District Office above.

1041/SSO	310/000	67SE/390SN
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY:  FOR  
Charles L. Fryxell  
Air Pollution Control Officer

DATE: 3/10/94  
dec/jl 3-15-94  
*Dir.*

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

T002835

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

LIME SILO which is described as follows:

A 50 ton capacity (by weight) Silo whose dimensions are 15 ft in diameter by 32 ft high. The volume is 5,655 ft<sup>3</sup> or approximately 47,100 gallons.

**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District. Applicable rules include, but are not limited to the following: 401, 402 403 and 430.
2. Lime may not be added to this silo unless the baghouse is functioning under valid District permit C002836.

Fee Schedule: 5(B); Rating: 47.1

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

<u>1041/550</u>	<u>310/018</u>	<u>675E/3905N</u>
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY: Charles L. Fryxell FOR  
Air Pollution Control Officer

DATE: 3/18/94  
dec/jl 3-15-94



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

T002837

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)

CASTLE MOUNTAIN VENTURE

P.O. Box 68

Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)

CASTLE MOUNTAIN VENTURE

9 mi E of Ivanpah/Hart mine road

near Mountain Pass, California

**DESCRIPTION:**

CEMENT SILO which is described as follows:

A 100 ton capacity (by weight) Silo whose dimensions are 15' in diameter by 32' high. The volume is 5.655 ft<sup>3</sup> or approximately 47,100 gallons.

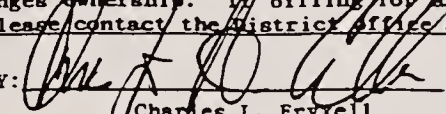
**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District. Applicable rules include, but are not limited to the following: 401, 402 403 and 430.
2. Cement may not be added to this silo unless the baghouse is functioning under valid District permit C002838.

Fee Schedule: 5(B); Rating: 47.1

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/SS0	310/018	67SE/3905N
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY:  FOR  
Charles L. Fryxell  
Air Pollution Control Officer

DATE: 3/18/94  
dec/jl 3-15-94  
L.A.

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661  
**PERMIT TO OPERATE**

C002839

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

BAGHOUSE - Gold Refinery (Furnace) which is described as follows:  
Donaldson Co., Inc., Torit Division, Model 4DF16, 16 Filter Elements, 3600 sq. ft. area, and 5.000 ACFM.

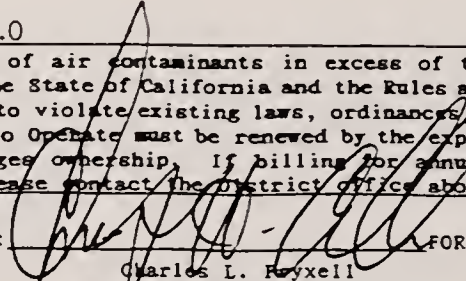
**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District.
2. The o/o shall maintain this baghouse in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles.
3. The o/o shall maintain a program of maintenance which includes at least monthly visual inspections of all associated equipment (inclusive of the bags and their suspensions system) and monthly measurements of the pressure differential across the bags.
4. The o/o shall maintain a log of all inspections/maintenance. keep the log on-site for a minimum of 2 years and present it to District personnel on request.
5. The owner/operator(o/o) shall maintain on-site, as a minimum, an inventory of replacement bags that assures compliance with applicable Rules of District Regulation IV.
6. This baghouse shall operate concurrently with the refinery furnace (Under Permit B002852).

Fee Schedule: 7(H): Rating: 1.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550	300/016	675E/3905N
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY:  FOR  
Charles L. Foxwell  
Air Pollution Control Officer

DATE: 3/10/94  
dec/jl 3-15-94  
N/A



MOJAVE DESERT  
AIR QUALITY MANAGEMENT DISTRICT  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

C002842

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1997

Page 1 of 1

**LEGAL OWNER OR OPERATOR: (356)**

CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

**EQUIPMENT LOCATION: (1021)**

CASTLE MOUNTAIN VENTURE  
115575 Hart Mine Road  
Ivanpah, CA 92309

**DESCRIPTION:**

BAGHOUSE - which will serve pick up points of dust generated by equipment described in permit B002833 specifically from Secondary Crusher/Screen. Conveyors 4, 5, 6, 7, 9, and Tertiary Crushers - Process B-1. Described as follows:

MikroPul Corp., Model	440S-10-20-TR
Temp. of Operation	Ambient
Total No. of Bags	440
Bag Dimensions	4 1/2" D x 10' L
Bag Material	Polyester, 16 oz./sq. yd.
Air-to-Cloth Ratio	5.88 : 1
ACFM	30,500

**CONDITIONS:**

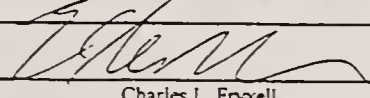
1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District. Applicable rules include, but are not limited to, the following: 401, 402, 403, and 430.
2. The o/o shall maintain this baghouse in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles.
3. The o/o shall maintain a program of maintenance which includes at least monthly visual inspections of all associated equipment (inclusive of the bags and their suspensions system) and monthly measurements of the pressure differential across the bags.
4. The o/o shall maintain a log of all inspections/maintenance, keep the log on-site for a minimum of 2 years and present it to District personnel on request.
5. The o/o shall maintain on-site, as a minimum, an inventory of replacement bags that assures compliance with applicable Rules of District Regulation IV.
6. This baghouse shall operate concurrently with equipment associated with the pick up points mentioned in the description above.
7. The o/o shall conduct emissions testing at least once each three (3) years, during June through September, beginning in 1995. This testing shall be consistent with administrative and technical procedures described in the District's Compliance Test Procedural Manual. Mass emission rates shall not exceed 16.5 lb/h.

Fee Schedule: 7(H); Rating: 1.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550	310/000	675E/3905N
SIC/	Emission,	Location
Process	Type/ID	UTM (Km)

BY:

  
Charles L. Fryxell  
Air Pollution Control Officer

FOR

DATE:

8/29/96

j18/96

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661  
**PERMIT TO OPERATE**

C002843

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

BAGHOUSE - which will serve pick up points of dust generated by equipment described in permit B002833 specifically Conveyor 7 to Screen/Surge Bin; Surge Bin to Conveyors 8A, 8B, and 10; Conveyor 10 to Conveyor 11 and all sample splitter/sampling tower points - Process B-2. Described as follows:

MikroPul Corp.. Model	221S-10-20-TR
Temp. of Operation	Ambient
Total No. of Bags	221
Bag Dimensions	4½" D x 10' L
Bag Material	Polyester, 16 oz./sq. yd.
Air-to-Cloth Ratio	5.9 : 1
ACFM	15,000

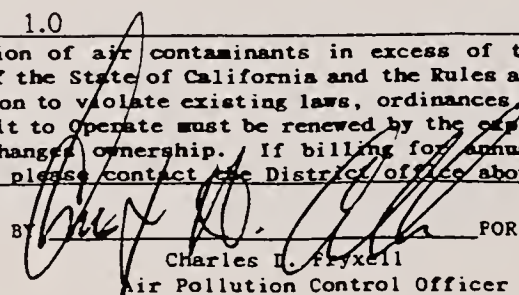
**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District. Applicable rules include, but are not limited to the following: 401, 402 403 and 430.
2. The o/o shall maintain this baghouse in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles.
3. The o/o shall maintain a program of maintenance which includes at least monthly visual inspections of all associated equipment (inclusive of the bags and their suspensions system) and monthly measurements of the pressure differential across the bags.
4. The o/o shall maintain a log of all inspections/maintenance, keep the log on-site for a minimum of 2 years and present it to District personnel on request.
5. The owner/operator(o/o) shall maintain on-site, as a minimum, an inventory of replacement bags that assures compliance with applicable Rules of District Regulation IV.
6. This baghouse shall operate concurrently with equipment described in Permit B002833.
7. The o/o shall conduct emissions testing at least once each three (3) years, during June through September, beginning in 1995. This testing shall be consistent with administrative and technical procedures described in the District's Compliance Test Procedural Manual. Emission measurements shall confirm the 99% collection efficiency of this baghouse as proposed by Viceroy and mass emission rates shall not exceed 16.5 lb/h.

Fee Schedule: 7(H); Rating: 1.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/SSO	300/000	675E/390SN
SIC/ process	Emission, Type/ID	Location UTM (Km)

BY  FOR  
Charles H. Fryxell  
Air Pollution Control Officer

DATE: 3/18/94  
dec/jl 3-15-94



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

T002844

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

WASTE OIL TANKS which are described as above ground, single walled, steel, with a submerged fill pipe, 1 ea. 4,900 gallon tank and 1 ea. 1500 gallon tank located at the maintenance warehouse oil storage area.

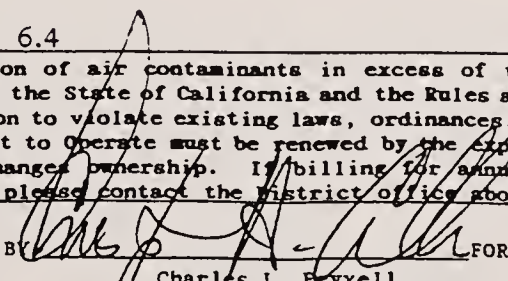
**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District.
2. Only crankcase oils and other waste oils generated by the o/o shall be stored and/or transferred into this tank.
3. The o/o shall strictly adhere to all federal and State of California and District Rules and Regulations which pertain to the storing, handling, transferring and transporting of waste oils.

Fee Schedule: 5(A): Rating: 6.4

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/SSO	230/000	67SE/390SN
SIC/ process	Emission, Type/ID	Location UTM (Km)

By  FOR  
Charles L. Fryxell  
Air Pollution Control Officer

DATE: 3/18/95  
dec/jl 3-15-94

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

N002845

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

GASOLINE DISPENSING FACILITY (NON-RETAIL) consisting of:

- A) Tanks - Number of Tanks 5
- |    | Tank No.          | 1     | 2     | 3     | 4     | 5     |
|----|-------------------|-------|-------|-------|-------|-------|
| 1. | Material Stored   | UL    | D     | D     | D     | D     |
| 2. | Volume Gallons    | 6,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| 3. | Above/Underground | A     | A     | A     | A     | A     |
- B) Dispensing Equipment (Total Dispensers) 12
- |    |                                       |                   |
|----|---------------------------------------|-------------------|
| 1. | Gasoline Dispensing Nozzles (Number)  | 1                 |
| 2. | Diesel Dispensing Nozzles (Number)    | 1                 |
| 3. | Phase II Vapor Recovery System (Type) | Hirt per G-70-128 |
- This gasoline dispensing facility is subject to District Rule 461 as well as all other applicable Rules and Regulations.

**CONDITIONS:**

1. The toll-free telephone number that must be posted is 1-800-635-4617.
2. The owner/operator (o/o) shall maintain a log of all inspections, repairs and maintenance on this equipment. The logs or shall be maintained on-site for at least 2 years and provided to District personnel on request.
3. Any modifications or changes to the piping or control fittings of the vapor recovery system shall require prior approval from the District.

Fee Schedule: 5(A) : Rating: 6.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550    232/047    675E/3905N  
SIC/    Emission,    Location  
process    Type/ID    UTM (Km)

BY: Charles L. Foxell FOR  
Air Pollution Control Officer

DATE: 3/18/94  
dec/jl 3-15-94



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

E002850

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

ELECTRICAL GENERATOR - EMERGENCY, Propane fired, described as follows:  
Waukesha L7042G with a Johnson-Matthey catalytic converter. This unit is rated by the manufacturer @ 600 kW(e) @ 889 BHP and uses 450 gallons propane/h at a maximum output of  $2.26 \times 10^6$  Btu/h.

**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District.
2. The owner/operator (o/o) is limited to operating this generator to 1.0 hr/week for test purposes and for emergency use only when the main power supply has been interrupted. The o/o shall log all operating times to the nearest one-quarter hour. The log shall be maintained on-site for a minimum of 2 years and provided to District personnel on request.
3. This generator shall not be operated more than 1000 hours in any calendar year without requesting and receiving written approval from the District APCO.

Fee Schedule: 7(G); Rating: 1.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/130	110/065	67SE/390SN
SIC/ process	Emission. Type/ID	Location UTM (Km)

BY:

*Charles L. Fryxell*  
Charles L. Fryxell  
Air Pollution Control Officer

DATE:

*3/18/94*

dec/jl 3-15-94

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661  
**PERMIT TO OPERATE**

B002852

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1995

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
9 mi E of Ivanpah/Hart mine road  
near Mountain Pass, California

**DESCRIPTION:**

GOLD RECOVERY which includes the following equipment:

	<u>HP</u>
Pregnant Solution Tank, 75' diameter x 15' high, 500,000 gal	30.0
Intermediate Solution Tank, 75' diameter x 15' high, 500,000 gal	200.0
Barren Solution Tank, 75' diameter x 15' high, 500,000 gal	200.0
Reagent Mix Tank, 9.25' diameter x 7' high, 3,920 gal	1.0
Carbon Adsorption Vessels, five (5), each @ 8' diameter x 13' high, 5,440 gal	
Acid Wash Tank, 4' diameter x 22' high, 2,300 gal	
Desorption Vessels, two (2) (one spare), each @ 4' diameter x 22' high, 2,300 gal	
Electrowinning Cells, two (2), 6' x 3' x 3', 450 gal each	
Solution Heaters, two (2) (one spare), Sioux Model D-2800 @ 2x10 <sup>6</sup> Btu/h-propane fuel	
Refinery Furnace, McEnglevar Speedy Melt Model T-200, 200 lb crucible size @ 1.2x10 <sup>6</sup> Btu/h-propane fuel	
Regeneration Kiln, electrical of 225 kW(e) rating	

TOTAL: 431.0

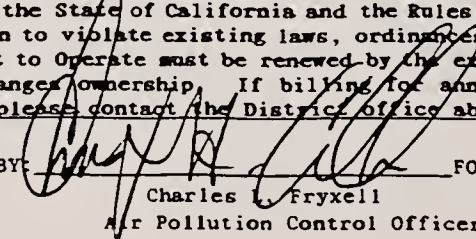
**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District.
2. The o/o shall maintain this equipment in strict accord with the recommendations of the manufacturer/supplier and/or sound engineering principles.
3. The furnace shall only be operated concurrently with the Gold Refinery Baghouse (District permit number C002839).

Fee Schedule: 1(C); Rating: 431.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District Office above.

1041/550	200/000	675E/3905N
SIC/ process	Emission, Type/ID	Location UTM (Km)

BY:  FOR  
Charles L. Fryxell  
Air Pollution Control Officer

DATE: 3/10/94  
dec/jl 3-15-94  
*lns*



MOJAVE DESERT  
AIR QUALITY MANAGEMENT DISTRICT  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

B003693

PERMIT TO OPERATE

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1996

Page 1 of 2

LEGAL OWNER OR OPERATOR: (356)

CASTLE MOUNTAIN VENTURE

P.O. Box 68

Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)

CASTLE MOUNTAIN VENTURE

9 mi E of Ivanpah/Hart Mine Rd near

Mountain Pass, CA

DESCRIPTION: Comminution Circuit which has the following components:

<u>EQUIPMENT DESCRIPTION</u>	<u>hp</u>
Conveyor No. 21	100.0
Reclaim Tunnel Sump	5.0
Reclaim Tunnel Vent Fan	0.5
MPSI Ball Mill 12 ft diam. by 16 ft	1250.0
Ball Mill high pressure lube pump	7.5
Ball Mill low pressure lube pump	3.0
Ball Mill Clutch Compressor	5.0
Cyclone Feed Pump No. 1	50.0
Cyclone Feed Pump No. 2	50.0
Grinding Bay Sump Pump No. 1	5.0
Grinding Bay Sump Pump No. 2	10.0
Tyler 4 ft by 8 ft Tramp Removal Screen	0.33
Primary Sampler	0.33
Thickener Feed Pump No. 1	20.0
Thickener Feed Pump No. 2	20.0
55 ft diam. Dorr-Oliver Thickener Rake Drive	5.0
Thickener Rake Lift Drive	1.0
Thickener Underflow Pump No. 1	20.0
Thickener Underflow Pump No. 2	20.0
30 ft diam. by 30 ft Stock Tank Agitator Drive	100.0
6 1/4 ft diam. by 10 ft Disc EIMCO Filter No. 1, Agitator Drive	10.0
6 1/4 ft diam. by 10 ft Disc EIMCO Filter No. 2, Agitator Drive	10.0
6 1/4 ft diam. by 10 ft Disc EIMCO Filter, Drive No. 1	5.0
6 1/4 ft diam. by 10 ft Disc EIMCO Filter, Drive No. 2	5.0
Agglomeration Drum Feed Pump No. 1	25.0
Agglomeration Drum Feed Pump No. 2	25.0
Process Solution Pump No. 1	75.0
Process Solution Pump No. 2	75.0

THIS PERMIT SUPERCEDES THE PERMIT ISSUED IN JULY 1995.

Fee Schedule: 1(D) Rating: 2736.0

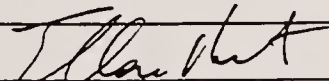
This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550  
SIC/  
Process

310/061  
Emission,  
Type/ID

675E/3905N  
Location  
UTM (Km)

BY:

  
Charles L. Fryxell  
Air Pollution Control Officer

FOR

DATE:

8/22/95

jl 8-95

EQUIPMENT DESCRIPTION: (Continued)

Seal Water Pump No. 1	7.5
Seal Water Pump No. 2	7.5
Vacuum Pump No. 1	200.0
Vacuum Pump No. 2	200.0
Filtrate Sump Pump No. 1	5.0
Filtrate Sump Pump No. 2	10.0
Barren Solution Pump No. 1	75.0
Barren Solution Pump No. 2	75.0
Sodium Cyanide Make-up Pump No. 1	0.75
Sodium Cyanide Make-up Pump No. 2	0.75
Gardner-Denver Plant Service Air Compressor	75.0
Carbon Column, Carbon Transfer Pump	5.0
Norchem Ancat Flocculent Injection Pump	0.25
Norchem Ancat Flocculent Booster Pump	0.5
Flocculent Storage Tank Mixer	0.33
Flocculent Feed Pump No. 1	0.75
Flocculent Feed Pump No. 2	0.75
Grinding Bay Service Crane, 3 motors, total	4.0
Roller Crusher, 2 motors @ 30 hp each	60.0
Conveyor Drive motor (Roller Crusher)	5.0
Sump Pump motor	20.0
The following equipment added pursuant to application number 95-16 of July 1995:	
Dewatering Pump, @ 30 hp	30.0
Primary Spiral Feed, @ 20 hp	20.0
Cleaner Spiral Feed Pump, @ 5 hp	5.0
Tyler Ty-Spread Screen	3.0
Knelson Separator	2.0
Magnetic Separator	0.25
TOTAL	2735.95

**CONDITIONS:**

1. The owner/operator (o/o) shall install, maintain and operate this equipment in strict accord to the recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions.
2. The o/o is limited to using diesel fuel on this site whose sulfur content is 0.05% on a weight per weight basis.
3. The o/o shall construct this circuit as described in submittals of February 15, 1993, April 14, 1993, February 7, 1994 and July 10, 1995. These documents are incorporated in these conditions in their entirety.
4. At the discretion of the District, the o/o shall take samples of diesel fuel and submit same for analysis for sulfur content by either ASTM-D 4294 or ASTM-D 2622-82. On receipt of the results, the o/o shall forward a copy to this District.



**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
5425 CIVIL DRIVE, TUSTINVILLE, CA 92302 (619) 245-1661  
**PERMIT TO OPERATE**

B004013

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 3 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

EXPIRES LAST DAY OF: MARCH 1996

Page 1 of 1

LEGAL OWNER OR OPERATOR: (356)  
CASTLE MOUNTAIN VENTURE  
P.O. Box 68  
Searchlight, NV 89046

EQUIPMENT LOCATION: (1021)  
CASTLE MOUNTAIN VENTURE  
115575 Hart Mine Road  
Ivanpah, California 92309

DESCRIPTION: Hydrochloric Acid Storing/Mixing system which is described as one 6500 gallon high density cross-linked polyethylene resin tank for storing delivered 15% HCl; one 5000 gallon tank dilution tank which will contain water and sufficient 15% HCl from the previous tank to make 3-5% HCl. There will be a non-metallic Goulds model 3196NM 3 hp TEFC pump for transferring the concentrated HCl to the dilution tank, and a Sherwood model CPPN-22 pump of  $\frac{1}{2}$  hp to pump the diluted acid to the acid wash tank and a 2 hp TEFC motor to drive a mechanical agitator on the dilution tank for mixing of the water and 15% HCl when it is transferred.

**CONDITIONS:**

1. The owner/operator (o/o) shall comply with all applicable rules and regulations of the District.
2. The o/o shall operate and maintain the equipment described in this permit in strict accord with the recommendations of the manufacturer or supplier and/or sound engineering principles which produce the minimum emission of air contaminants.

Fee Schedule: 5(B): Rating: 11.5

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/400	300/000	67SE/3905N
SIC/	Emission.	Location
process	Type/ID	UTM (Km)

BY: Charles L. Frvxell FOR  
Air Pollution Control Officer

DATE: 4/4/95

11 3-95

**MOJAVE DESERT**  
**AIR QUALITY MANAGEMENT DISTRICT**  
15428 CIVIC DRIVE, VICTORVILLE, CA 92392 (619) 245-1661

B004643

**PERMIT TO OPERATE**

Operation under this permit must be conducted in compliance with all information included with the initial application, initial permit conditions, and conditions contained herein. The equipment must be maintained and kept in good operating condition at all times. This Permit to Operate or copy must be posted on or within 8 meters of equipment. If copy is posted, original must be maintained on site in central file available for inspection at all times.

**EXPIRES LAST DAY OF: MARCH 1997**

Page 1 of 1

**LEGAL OWNER OR OPERATOR: (356)**

CASTLE MOUNTAIN VENTURE

P.O. Box 68

Searchlight, NV 89046

**EQUIPMENT LOCATION: (1021)**

CASTLE MOUNTAIN VENTURE

115575 Hart Mine Rd.

Ivanpah, CA 92309

**DESCRIPTION:**

Mercury Retort and Distillation System which contains the following equipment: 3.0 cubic foot mercury retort and attended combustion burner that is propane fired at 150,000 Btu/h. Additionally there are: the captive distillation system, vacuum pump, recirculation pump, compressor and the external tank and mercury trap.

**CONDITIONS:**

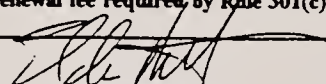
1. The owner/operator (o/o) shall install, operate and maintain this equipment in strict accord with those recommendations of the supplier and/or manufacturer.
2. The o/o shall log the mass of mercury collected on a monthly basis. The log shall be maintained current, on-site for a minimum and be provided to District personnel on request.

Fee Schedule: 7(D); Rating: 1.0

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of this District. This permit cannot be construed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This Permit to Operate must be renewed by the expiration date above or an earlier date if equipment is moved, altered, or changes ownership. If billing for annual renewal fee required by Rule 301(c) is not received by expiration date, please contact the District office above.

1041/550	122/047	675E/3905N
SIC/ Process	Emission, Type/ID	Location UTM (Km)

BY:

  
Charles L. Fryxell  
Air Pollution Control Officer

FOR

DATE: 2/26/96

j1 2/96



**APPENDIX H**  
**ANNUAL REPORT MEMORANDUM**  
**ON BIOLOGICAL OPINION #1-6-90-F-24**

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VICEROY  
GOLD  
CORPORATION

P.O. Box 68,  
Searchlight, NV 89046  
Telephone (702) 252-8040  
Fax (702) 252-8043

January 15, 1996

Mr. Ray Bransfield  
U.S. Fish and Wildlife Service  
Southern California Field Station  
2140 Eastman Ave., Suite 100  
Ventura, CA. 93003

**Re: Annual Report on Biological Opinion**

Dear Mr. Bransfield,

This report is designed to meet the terms and conditions of Section 2n of the Biological Opinion issued by the U.S. Fish and Wildlife Service for the Castle Mountain Mine. It will detail the effectiveness of ongoing mitigation measures and monitoring efforts by the Castle Mountain Mine for 1995.

No takes of desert tortoise have occurred during 1995.

We carry out strict measures to make employees and vendors who use the access road aware of the importance of protecting the desert tortoise through intense education training.

Viceroy monitors the access road for raven activity (report attached) and we also continue the practice of burying road kills (these are mainly rabbits) to decrease attraction of ravens.

Company provided transportation continues to be used by about 98% of the employees. Buses are used to transport the shift workers and large vans are used for the majority of the administrative staff and maintenance personnel. Early in 1996, we will begin working a 12 hour shift schedule instead of 8 hour shifts, thus further decreasing the number of trips required on the access road. The speed limit of 35 mph on the access road continues to be emphasized to bus and van drivers.

Project activities are restricted to existing roads and work areas eliminating disturbances in undisturbed areas.

Desert tortoise training is provided to all employees and contractors at the mine. Vehicles used to transport employees are provided with disposable gloves to use in event a tortoise is encountered on the access road that needs to be moved.



**CASTLE MOUNTAIN MINE**  
Operated by Viceroy Gold Corporation

The tortoise proof fencing installed around the mine site is periodically inspected for trapped wildlife, its integrity, and repaired if necessary.

Reclamation activities at the mine included the following:

- Plant growth in the greenhouse continues. By year end over 5,000 plants were growing from over 50 species native to the area. These plants will be used in future reclamation projects.
- A test of POZOCAP as a revegetation product continued to be monitored on the lowest face of the South Clay Pit Reclamation Area. Several abandoned exploration drill roads were pulled back and prepared for reclamation. A test plot was established on the heap to study the success of plant growth in spent heap leach material.

Sincerely,

  
Micheal Attaway  
General Manager



**Summary of raven activity on 18 mile segment of access road  
1995**

Month	Number Seen	Description of Activity
JAN	1	1 Flying
FEB	2	2 Flying
MAR	2	2 Flying
APR	4	2 Flying, 2 Perched
MAY	4	3 Flying, 1 Eating road kill
JUN	2	2 Flying
JUL	2	2 Flying
AUG	16	5 Flying, 11 Perched
SEP	9	7 Flying, 1 Perched, 1 Eating road kill
OCT	14	10 Flying, 4 Perched
NOV	4	2 Flying, 1 Perched, 1 Eating road kill
DEC	5	5 Flying
TOTAL	65	

Attachment 1

Castle Mountain Mine 69 kV Power Transmission Line - Stipulations

1. Vegetation at each power pole site shall be crushed instead of removed through blading.
2. Desert tortoise burrows within the mine road and power line corridor shall be located and flagged prior to initiating surface disturbing activities.
3. Burrows shall be checked for occupancy by desert tortoises.
4. Anti-perching devices added to the tops of the poles shall not be required.
5. Flagged burrows shall be avoided whenever possible when selecting pole placement.
6. If occupied burrows cannot be avoided, relocation of the desert tortoises shall be coordinated with the Bureau and Service, and completed as specified in the Biological Opinion (1-6-90-F-24).
7. Construction and maintenance personnel shall be informed of the desert tortoises' protected status and the penalties associated with violation of the Endangered Species Act. Proper protocol shall be followed should desert tortoises be encountered in the construction area or during construction activity.
8. Prior to the initiation of any surface disturbing activities, Viceroy shall provide the appropriate payment as mitigation for the temporary loss of 5.1 acres and permanent loss of 0.5 acres of desert tortoise habitat resulting from the installation of the power line. The mitigation rate is based on \$ 324 per acre for permanently disturbed habitat and \$ 130 per acre for temporarily disturbed habitat, but will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index beginning January 1, 1992.

These funds shall be directly deposited into Desert Tortoise Habitat Conservation Fund Number 236-8290, administered by Clark County, for the purpose of securing desert tortoise management areas, habitat enhancement, and tortoise research. However, none of these funds shall be used to develop the Habitat Conservation Plan. These funds are independent of any other fees collected by the County for desert tortoise conservation planning. These funds shall be held in an interest bearing account and the accrued interest also shall be expended on desert tortoise conservation measures. Proposed expenditures shall be approved by the Service. Should the funds not be expended on desert tortoise conservation measures approved by the Service within 2 years of their placement in the County fund, these funds shall be transferred to The Nature Conservancy for such purposes.

Total payment shall be made prior to any surface disturbing activity on Federal land in order for the Bureau and Viceroy to be in compliance with the provisions of the Endangered Species Act. Payment shall be by certified check or money order payable to Clark County, and delivered to:



BLM Slip No.	BLM Description	Co. No.	County Description	Report to BLM/ County or Both	✓	Time frame for Compliance and Status
						Page 2
35	Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times. [FEIS Table 3.1.]	58	Employees shall not bring domestic cats to the site. Dogs must be kept on a leash at all times. [FEIR Table 3.1.]	Both	✓	Ongoing.
36	The Operator shall locate and flag on site tortoise burrows before initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and FWS. [DEIS p. 6.5-3.]	59	The Applicant shall locate and flag on site tortoise burrows before initiating surface-disturbing activities. Flagged areas shall be avoided whenever possible. If occupied burrows are within areas designated for project facilities or activities, relocation of tortoises shall be coordinated with BLM and FWS. [DEIR p. 6.5-3.]	Both	✓	SWCA sweep for desert tortoise and burrows was completed Spring, 1991. See SWCA report "Results of Section 7 Compliance - Mojave Desert Tortoise", January, 1992.
37	The Operator shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status. [DEIS p. 6.5-3; FEIS Appendix G, and Biological Opinion, p. 9.]	60	The Applicant shall inform project personnel that only authorized personnel shall handle tortoises and of the tortoises' protected status. [DEIR p. 6.5-3; FEIR Appendix G, and Biological Opinion, p. 9.]	Both	✓	Training performed as part of new hire orientation. Distribution of materials to employees throughout operation.
38	A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented. [DEIS p. 6.5-3.]	61	A project-sponsored program of bus/van pooling to the project from locations in the Las Vegas valley shall be implemented. [DEIR p. 6.5-3.] At a minimum, seventy-five percent (75%) of the work force shall travel to the project by bus/van pool.	Both	✓	Busses and vans are used to transport employees to and from the mine site.
39	The easterly segment of the Mitigated Access Route shall use an alignment along the western flank of Piute Valley known as the YKL Ranch Maintenance Road. Any tortoise burrows located within the alignment of new road construction shall be flagged and if tortoises are present, they shall be removed according to procedures acceptable to BLM and FWS. [FEIS Table 3.1, p. 3-14.]	N/A			✓	SWCA sweep for desert tortoise and burrows was completed Spring, 1991. See SWCA report entitled "Results of Section 7 Compliance-Mojave Desert Tortoise" was submitted to the BLM and County in January, 1992.
40	Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife. [DEIS p. 6.5-5.]	62	Project waste shall be properly managed and the site monitored to control refuse that could attract ravens. Prior to landfill disposal, refuse shall be kept in containers designed to exclude wildlife. [DEIR p. 6.5-5.]	Both	✓	Ongoing. Trash disposed by Silver Dollar Recycling.
41	Power lines shall be constructed in a manner to discourage raven nesting/roosting. [FEIS Section 3.2.1, and Table 3.1.]	63	Power lines shall be constructed in a manner to discourage raven nesting/roosting. [FEIR Section 3.2.1, and Table 3.1.]	Both	✓	This condition was deleted in the Record of Decision respecting the 69 kV power transmission line dated October 17, 1991.
42	As part of the on site biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven population numbers are occurring. [DEIS p. 6.5-5.]	64	As part of the on site biological monitoring, raven populations in the project vicinity shall be monitored by the project environmental specialist. Results shall be reported to BLM annually to assess if unusual increases in raven population numbers are occurring. [DEIR p. 6.5-5.]	Both	✓	Initiated by SWCA. Report issued January, 1992, and was submitted with annual MMCR. Raven monitoring performed daily, results submitted to BLM annually. (Exhibit 3)
44	The Operator shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U.S. Fish and Wildlife Service's Biological Opinion. [FEIS Section 3.2.1, Appendix G.]	65	The Applicant shall comply with the Reasonable and Prudent Measures and the implementing Terms and Conditions set forth in the U.S. Fish and Wildlife Service's Biological Opinion. [FEIR Section 3.2.1, Appendix G.]	Both	✓	Ongoing. Viceroy eliminated cattle grazing on the Crescent Peak Allotment on January 1, 1991. Purchase of 745 acres of tortoise habitat completed in 1994. Annual report on Biological Opinion. (Exhibit 3).

Checkmark (✓) designates initiation of and/or completion of a stipulation and/or condition.  
N/A denotes not applicable.

